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MORBIDITY AMONG SCHOOL CHILDREN IN HAGERSTOWN, MD.

CASES OF ILLNESS AND DAYS LOST FROM SCHOOL ON ACCOUNT OF ILLNESS AMONG WHITE SCHOOL CHILDREN DURING THE SCHOOL MONTHS, DECEMBER, 1921, TO MAY, 1923, INCLUSIVE.¹

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Of the total population of nearly 106,000,000 persons in the United States in 1920, about 33,000,000, or 31 per cent, were 5 to 20 years of age. Of the 33,000,000 children of school age, 65 per cent were actually attending school. Furthermore, the 22,000,000 children attending schools of one kind or another constituted nearly 20 per cent of the total population of the United States.² Considering school attendance as an occupation, these children comprise a large and more or less homogeneous industrial group. Little or nothing is known about the morbidity of this group except in the case of the notifiable diseases—largely the so-called communicable diseases of children.

In the autumn of 1921 the city of Hagerstown, Md., was selected by the United States Public Health Service as a fairly representative American community in which to study morbidity among school children. The investigation was carried on in cooperation with the Washington County Health Demonstration and the public school authorities of Hagerstown.

The population of Hagerstown, according to the census of 1920, was 28,064; of the total population, 93 per cent were native white and 88 per cent were native white of native parents, 5 per cent were negroes, and less than 2 per cent were foreign-born white.³

The school attendance in 1920 was 5,071. Of this number 92 per cent were native white children of native parents, 4 per cent were negroes, and 4 per cent were foreign born or children of foreign-born or mixed parentage.⁴

The method of collecting data.—In order to place as little additional work as possible on the teachers, whose time is as fully occupied in

¹ From Field Investigations in Child Hygiene, United States Public Health Service, in cooperation with the Statistical Office, United States Public Health Service.

² Fourteenth Census of the United States, 1920, Vol. II, pp. 34; 1043. Bureau of the Census, Department of Commerce.

³ *Idem*, p. 322.

⁴ Fourteenth Census of the United States, 1920, Vol. II, p. 1098.

Hagerstown as elsewhere, it was arranged that the reported data should be assembled in the office of the local representative of the United States Public Health Service. At the beginning of the school year a record was started for each child, and to this record was transferred the data submitted weekly by teachers, on a specially prepared form, showing the names of all the children who had been absent on account of sickness and had returned to school during the current week, together with the cause of the illness and the number of school days each child was absent. A record was also kept of all new entrants and withdrawals from school in order that an accurate count could be made of the number of children under observation at any given time or during the year as a whole. In other words, the records of sickness and of the days the child was enrolled (under observation) were brought together on a single card for each child, together with other data regarding sex, age, race, school grade, the character of school work, and the like.

It is fully realized that some children may have reported illness when they were not really sick. No investigation was made at home; but, as is usual in public schools, written excuses were required from the parents when a child returned after an absence from school. Every effort was made to eliminate false reports. A teacher, particularly in the lower grades, is usually familiar with a great many of the details of the lives of her pupils, and it is felt that she is therefore in a position to get an accurate report as to whether the absence was due to sickness or to some other cause. The diagnoses are, of course, only approximate and are stated in the language of the laity rather than in medical terms because they could not be made or confirmed by physicians.

Description of data.—Owing to unavoidable delay in starting the work, data for only six months of the 1921-22 school year were used. Records were kept for the whole of the 1922-23 school year and also for 1923-24. However, the present report includes only the data up to the end of the 1922-23 school year.

The 1921-22 data used in this study consist of the morbidity records of 3,712 white children. For the year 1922-23 the data consist of the records of 5,126 white children—practically all of the white children of school age in Hagerstown. Table 1 shows the sex and age distribution of the children under observation for each of the two school years. Age in this table and in all other tabulations in this study means age at nearest birthday as of the middle of the school year.

TABLE 1.—Number and percentage distribution according to sex and age of children under observation for sickness during each school year—While school children of Hagerstown, Md.

Age nearest birthday.	Number.						Percentage.					
	School year 1921-22.			School year 1922-23.			School year 1921-22.			School year 1922-23.		
	Both sexes.	Boys.	Girls.	Both sexes.	Boys.	Girls.	Both sexes.	Boys.	Girls.	Both sexes.	Boys.	Girls.
All ages..	3,712	1,837	1,875	5,126	2,614	2,512	100.0	100.0	100.0	100.0	100.0	100.0
5.....	5	2	3	14	6	8	0.1	0.1	0.2	0.3	0.3	0.4
6.....	251	129	122	238	121	117	7.0	7.3	6.7	5.2	5.2	5.1
7.....	417	208	209	491	248	243	11.6	11.8	11.5	10.7	10.7	10.7
8.....	433	213	220	517	273	244	12.1	12.1	12.1	11.2	11.8	10.7
9.....	343	171	172	477	235	242	9.6	9.7	9.5	10.4	10.1	10.6
10.....	357	186	171	442	215	227	10.0	10.5	9.4	9.6	9.3	10.0
11.....	338	155	183	446	230	216	9.4	8.8	10.1	9.7	9.9	9.5
12.....	313	153	160	434	216	218	8.7	8.7	8.8	9.4	9.3	9.6
13.....	265	119	146	426	180	246	7.4	6.7	8.0	9.3	7.7	10.8
14.....	257	123	134	366	178	188	7.2	7.0	7.4	8.0	7.7	8.2
15.....	235	115	120	276	136	140	6.6	6.5	6.6	6.0	5.9	6.1
16.....	180	99	81	198	109	89	5.0	5.6	4.5	4.3	4.7	3.9
17.....	102	45	57	144	80	64	2.8	2.5	3.1	3.1	3.4	2.8
18.....	67	38	29	95	65	30	1.9	2.2	1.6	2.1	2.8	1.3
19.....	14	7	7	29	22	7	0.4	0.4	0.4	0.6	0.9	0.3
20.....	2	1	1	7	7	7	0.1	0.1	0.1	0.2	0.3	-----
21.....	2	2	-----	2	2	-----	0.1	0.1	-----	-----	0.1	-----
Unknown age..	131	71	60	524	291	233	-----	-----	-----	-----	-----	-----

It will be observed that the distribution of the children of each sex according to age is similar.

MORBIDITY FROM ALL CAUSES.

It is obvious that the morbidity can be measured and the importance of a single disease as a cause of absence from school can be assessed in a given population in two ways. According to one method the measure may be based on knowledge of the number of cases of illness occurring in the school population, and by the other on the time lost from school on account of these cases of illness. The rates based on these two sets of data may or may not be parallel. For example, a few cases of whooping cough or scarlet fever, diseases of more or less prolonged duration, may cause more loss of time from school than many cases of headache. This possibility suggests a third measure of morbidity—the days lost per case. This measure is a definite indicator of the seriousness of a disease from the standpoint of time lost from school.

Method of computation.—In computing the morbidity rates for this study, the advisability of basing them on the rate per 10,000 days enrolled⁵ was considered because this method has the advantage of putting the rates on a comparable basis without further adjustment. The common practice in studies of morbidity and mortality among adults is to find the annual rate; in other words, no matter what

⁵ See Appendix, Table 12, for rates on such a basis.

period is covered, to reduce the rate to the basis of a calendar year of 365 days by finding what the rate would be for a whole year. This latter method was not adopted, because to take the sickness occurring in the school months, which include the winter months with a higher sickness prevalence, and reduce it to a calendar-year basis does not seem to be a fair statement of the rate per calendar year. In this latitude more cases of sickness ordinarily occur in the winter than in the summer. It can not be assumed, therefore, that the rates continue the same during the summer as during the winter school months. It seems more desirable to reduce the rates to the basis of a school year; that is, to compute the rate per 1,000 children per full-time school year. It is particularly necessary to use a full-time school year because some children are entering and some are dropping out of the school from time to time during each semester.

The length of the school year varies in different cities. In some the term is 9 months and in others 10 months; but probably in a majority of them the term is 9 months with an average of 20 school days per month, or 180 school days in a school year. In Hagerstown, during the school year 1921-22, the actual number of days of school was 180, and in 1922-23, 184 days, exclusive of Saturdays, Sundays, and holidays. The computations in this study, however, are based on a school year of 180 school days, and the rates are computed as cases occurring per 1,000 school children for a full-time school year of 180 school days. Likewise, the rates for the school days lost were computed on the basis of 1,000 children per school year of 180 school days.

Morbidity rates.—The rates for all causes of illness are shown in Table 2, by sex and age, as is also the number of days lost per case of illness. For convenience of comparison with studies in which the rates are expressed in other ways,⁶ the case rates per 100,000 days enrolled and the percentage of the total possible days of attendance which were lost on account of sickness are also shown.

⁶ Absenteeism among white and negro school children in Cleveland (Ohio) 1922-23. By G. E. Harmon and G. E. Whitman. Public Health Reports, vol. 39, No. 12, Mar. 21, 1924, pp. 559-567. (Reprint No. 908).

Absenteeism because of sickness in certain schools in Cleveland (Ohio) 1922-23. By G. E. Harmon and G. E. Whitman. Public Health Reports, vol. 39, No. 23, June 6, 1924, pp. 1359-1366. (Reprint No. 928.)

TABLE 2.—Morbidity from all causes, by sex and age, among white school children of Hagerstown, Md., December, 1921, to May, 1923, inclusive.

Sex.	All ages.	Age nearest birthday.										16 and over.	Unknown age.
		6 and under.	7	8	9	10	11	12	13	14	15		

CASES OF SICKNESS PER 1,000 CHILDREN PER SCHOOL YEAR OF 180 SCHOOL DAYS.													
Both sexes.....	2,333	2,848	2,779	2,721	2,541	2,297	2,134	2,300	2,106	2,073	1,887	1,995	2,091
Boys.....	2,194	2,536	2,401	2,451	2,037	2,054	2,210	2,189	1,890	1,899	1,784	1,659	1,950
Girls.....	2,476	3,171	2,656	2,790	2,629	2,557	2,213	2,387	2,268	2,237	1,989	2,449	2,267

SCHOOL DAYS LOST ON ACCOUNT OF SICKNESS PER 1,000 CHILDREN PER SCHOOL YEAR OF 180 SCHOOL DAYS.													
Both sexes.....	7,295	12,673	11,000	9,836	8,121	6,439	5,656	6,042	5,301	5,345	4,655	4,576	6,441
Boys.....	6,879	11,893	12,595	9,006	7,772	5,680	5,137	5,426	4,823	4,234	4,192	5,635	5,452
Girls.....	7,720	13,484	10,593	10,715	8,461	7,199	6,167	6,638	5,515	5,833	5,073	5,095	7,452

SCHOOL DAYS LOST PER CASE OF SICKNESS.													
Both sexes.....	3.13	4.45	4.17	3.61	3.20	2.80	2.65	2.63	2.52	2.58	2.47	2.39	3.08
Boys.....	3.14	4.69	4.34	3.39	3.17	2.79	2.50	2.46	2.65	2.54	2.37	2.53	2.89
Girls.....	3.12	4.25	3.99	3.84	3.22	2.82	2.79	2.78	2.43	2.61	2.55	2.08	3.29

CASES OF SICKNESS PER 100,000 DAYS ENROLLED.													
Both sexes.....	1,296	1,582	1,544	1,512	1,412	1,276	1,186	1,278	1,170	1,152	1,048	1,108	1,162
Boys.....	1,219	1,406	1,412	1,362	1,302	1,132	1,141	1,228	1,050	1,065	991	922	1,083
Girls.....	1,375	1,762	1,475	1,550	1,461	1,421	1,230	1,326	1,260	1,243	1,105	1,361	1,260

PERCENTAGE OF THE TOTAL POSSIBLE DAYS OF ATTENDANCE WHICH WERE LOST ON ACCOUNT OF SICKNESS.													
Both sexes.....	4.05	7.04	6.44	5.46	4.51	3.58	3.14	3.36	2.95	2.97	2.59	2.54	3.58
Boys.....	3.82	6.61	7.00	5.00	4.32	3.16	2.85	3.01	2.79	2.68	2.35	2.33	3.13
Girls.....	4.29	7.49	5.88	5.95	4.70	4.00	3.43	3.69	3.06	3.24	2.82	2.83	4.14

TABLE 2.—Morbidity from all causes, by sex and age, among white school children of Hagerstown, Md., December, 1921, to May, 1923, inclusive—Continued.

Sex.	All ages.	Age nearest birthday.											16 and over.	Unknown age.
		6 and under.	7	8	9	10	11	12	13	14	15			
NUMBER OF CASES OF SICKNESS.														
Both sexes.....	17,847	1,223	2,179	2,231	1,816	1,580	1,441	1,484	1,277	1,123	811	1,427	1,255	
Boys.....	8,479	555	1,144	1,121	865	701	688	702	491	407	382	682	651	
Girls.....	9,368	668	1,035	1,110	951	879	753	782	786	626	429	745	604	
NUMBER OF DAYS LOST FROM SICKNESS.														
Both sexes.....	55,800.0	5,443.0	9,095.5	8,063.0	5,803.0	4,429.5	3,819.0	3,898.0	3,214.0	2,805.0	2,000.5	3,273.0	3,866.5	
Boys.....	26,588.0	2,602.5	4,967.0	3,800.0	2,742.5	1,955.0	1,721.0	1,723.5	1,303.0	1,262.5	906.5	1,723.0	1,841.5	
Girls.....	29,212.0	2,840.5	4,128.5	4,263.0	3,060.5	2,474.5	2,098.0	2,174.5	1,911.0	1,542.5	1,094.0	1,550.0	1,985.0	
NUMBER OF DAYS OF EXPOSURE.														
Both sexes.....	1,376,910	77,307	141,139	147,561	128,627	123,825	121,535	116,136	109,134	97,497	77,359	128,745	108,045	
Boys.....	695,703	39,390	70,984	75,945	63,516	61,951	60,299	57,171	46,765	47,118	38,539	73,989	60,096	
Girls.....	681,147	37,917	70,155	71,616	65,111	61,874	61,236	58,965	62,369	50,379	38,820	54,756	47,949	
NUMBER OF FULLTIME SCHOOL YEARS OF EXPOSURE.														
Both sexes.....	7,649.50	429.48	784.11	819.78	714.59	687.92	675.19	645.20	606.30	541.65	429.78	715.25	600.25	
Boys.....	3,865.35	218.83	394.36	421.92	352.87	344.17	334.99	317.62	259.81	261.76	214.11	411.05	333.87	
Girls.....	3,784.15	210.65	389.75	397.87	361.73	343.74	340.20	327.58	346.49	279.88	215.67	304.20	266.38	

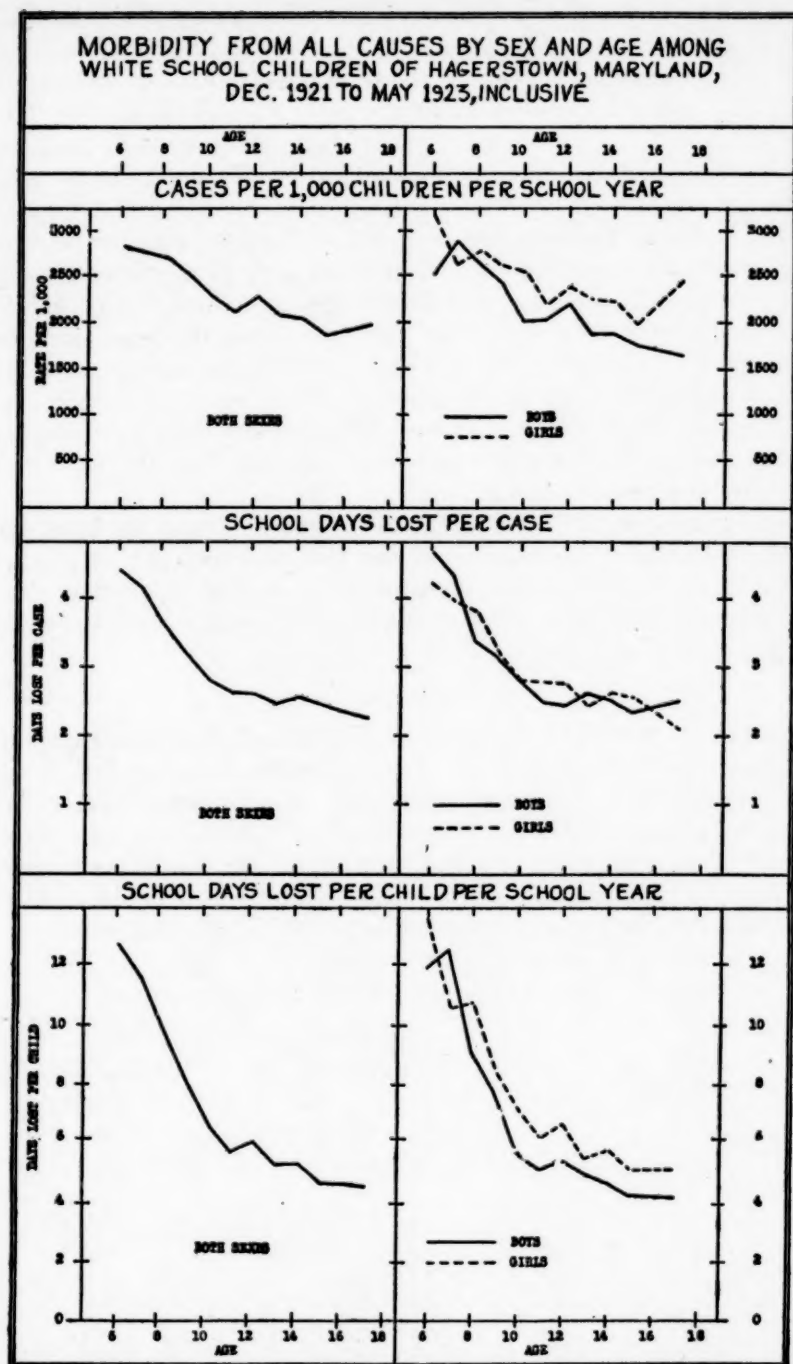


FIG. 1.

It will be noted that there were 2,333 cases per 1,000 children per school year, or 2.3 cases per child, with a loss of 7.3 school days per child per year, or 4.1 per cent of the total possible days of attendance. The boys had 2.2 cases per child against 2.5 for girls, and 6.9 days lost against 7.7 days for girls. The days lost per case, however, were practically the same for boys and girls. Figure 1 shows these rates graphically.

The scales in Figure 1 are arranged so that the rate for all ages combined is the same absolute height on each of the three graphs. The variation in the rates at different ages, therefore, can be judged accurately from the graph. The case rate shows the least variation and the days lost per child shows the greatest variation. In every instance there is a fairly marked decrease in the rates as age increases. In the rates for the days lost per child and the days lost per case the decrease is considerably more marked from 6 to 10 years than after those ages.

The graphs on the right in Figure 1 show the rates for boys and girls separately. The case rates and the days lost per person are consistently higher for girls than for boys, the only exception being the 7-year-old children. But the days lost per case do not show any consistent difference between the two sexes.

CAUSES OF ILLNESS.

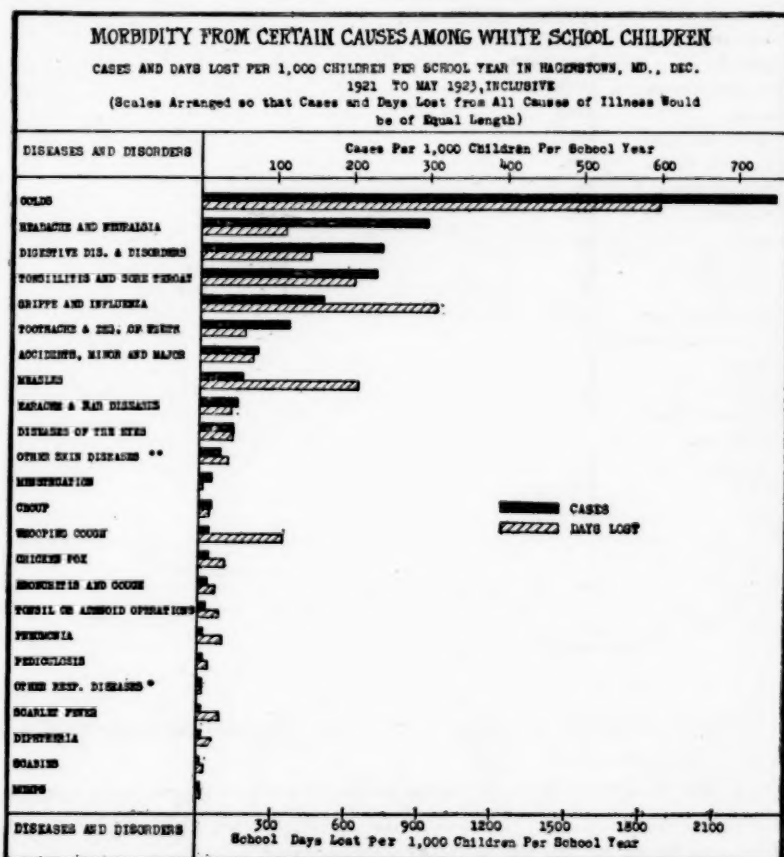
Owing to the more common occurrence of the communicable diseases during childhood and the frequently demonstrated possibility of controlling them, it is important to know what diseases are the chief causes of absence from school so that parents may be induced to give support and cooperation to the health and school authorities in enforcing measures to combat them. Table 3 shows both the case rates and the days lost per child by cause and sex.

TABLE 3.—*Morbidity among white school children of all ages, by sex and cause, in Hagerstown, Md., December, 1921, to May, 1923, inclusive.*

Diagnosis.	Cases per 1,000 children per school year of 180 school days.			School days lost per 1,000 children per school year of 180 school days.		
	Both sexes.	Boys.	Girls.	Both sexes.	Boys.	Girls.
All causes.....	2,333.1	2,193.6	2,475.6	7,295	6,879	7,720
Measles.....	52.8	51.2	54.4	643	629	658
Mumps.....	1.2	.8	1.6	6	2	11
Whooping cough.....	13.7	16.8	10.6	346	411	279
Chicken pox.....	13.3	16.3	10.3	113	139	87
Scarlet fever.....	4.1	3.4	4.8	96	94	97
Diphtheria.....	3.9	4.1	3.7	67	70	65
Croup.....	16.7	18.4	15.1	46	51	41
Colds.....	744.0	749.7	738.1	1,860	1,844	1,876
Grippe and influenza.....	160.3	140.0	181.0	960	840	1,081
Tonsillitis and sore throat.....	227.9	194.8	261.6	625	519	734
Bronchitis and cough.....	11.5	8.0	15.1	66	43	89
Pneumonia.....	5.4	6.0	4.8	105	100	102
Other respiratory diseases and disorders.....	5.0	3.1	6.9	24	19	29
Digestive diseases and disorders.....	235.8	226.4	245.5	445	387	505

TABLE 3.—Morbidity among white school children of all ages, by sex and cause, in Hagerstown, Md., December, 1921, to May, 1923, inclusive—Continued.

Diagnosis.	Cases per 1,000 children per school year of 180 school days.			School days lost per 1,000 children per school year of 180 school days.		
	Both sexes.	Boys.	Girls.	Both sexes.	Boys.	Girls.
Toothache and diseases of the teeth.....	115.8	114.3	117.3	178	168	187
Earache and ear diseases.....	49.8	43.7	56.0	127	110	145
Diseases and disorders of the eyes.....	42.6	39.8	45.5	130	129	132
Headache and neuralgia.....	294.9	252.0	338.8	345	309	381
Scabies.....	3.3	3.9	2.6	38	35	41
Pediculosis.....	5.1	2.3	7.9	50	16	84
Other skin diseases.....	27.2	30.8	23.5	117	141	92
Accidents, minor and major.....	74.8	86.4	62.9	213	263	163
Tonsil or adenoid operation.....	8.2	8.3	8.2	86	65	107
Menstruation.....			34.1			39
Other diseases and disorders.....	69.0	56.7	81.7	282	228	337
Unknown diagnosis.....	129.9	116.4	143.8	306	255	357
Number of days of exposure.....				1,376.910	685.763	681.147
Full time years of exposure.....				7,649.50	3,865.35	3,784.15



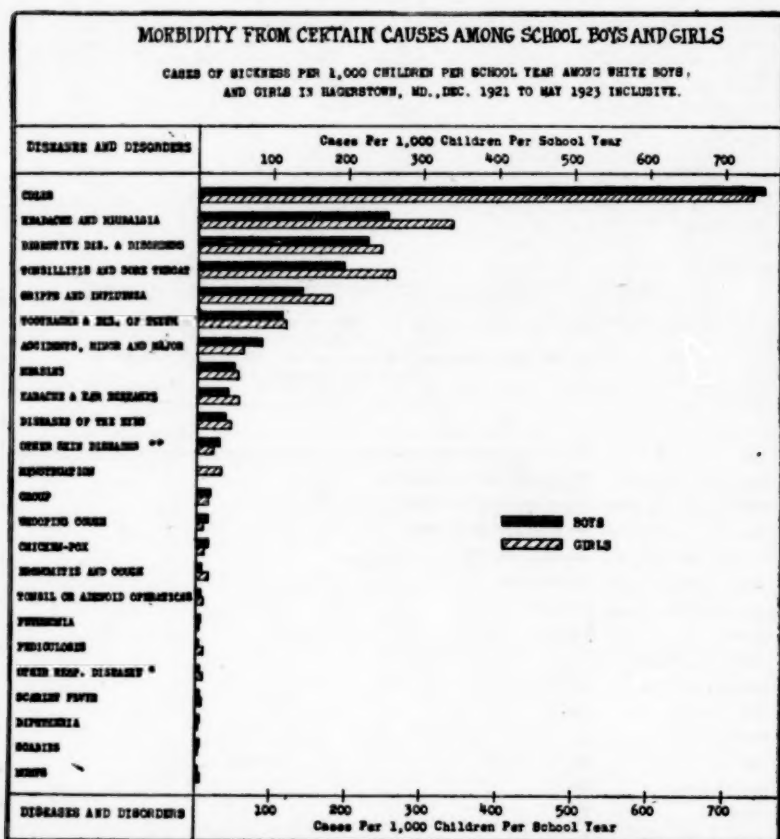
* Includes respiratory diseases other than colds, grippe and influenza, tonsillitis and sore throat, bronchitis and cough, and pneumonia.

** Includes skin diseases other than scabies and pediculosis.

FIG. 2.

In Figure 2 the case rates for both sexes have been arranged according to the size of the rate, and plotted. The days lost per 1,000 children per school year are also shown for each disease.

The scales in this figure are so arranged that the bars for the case rate and the days lost per child for all causes combined would be of equal length, if shown on the graph, and, therefore, the absolute length of the two bars for any disease are comparable as a measure



* Includes respiratory diseases other than colds, grippe and influenza, tonsillitis and sore throat, bronchitis and cough, and pneumonia.

** Includes skin diseases other than scabies and pediculosis.

FIG. 3.

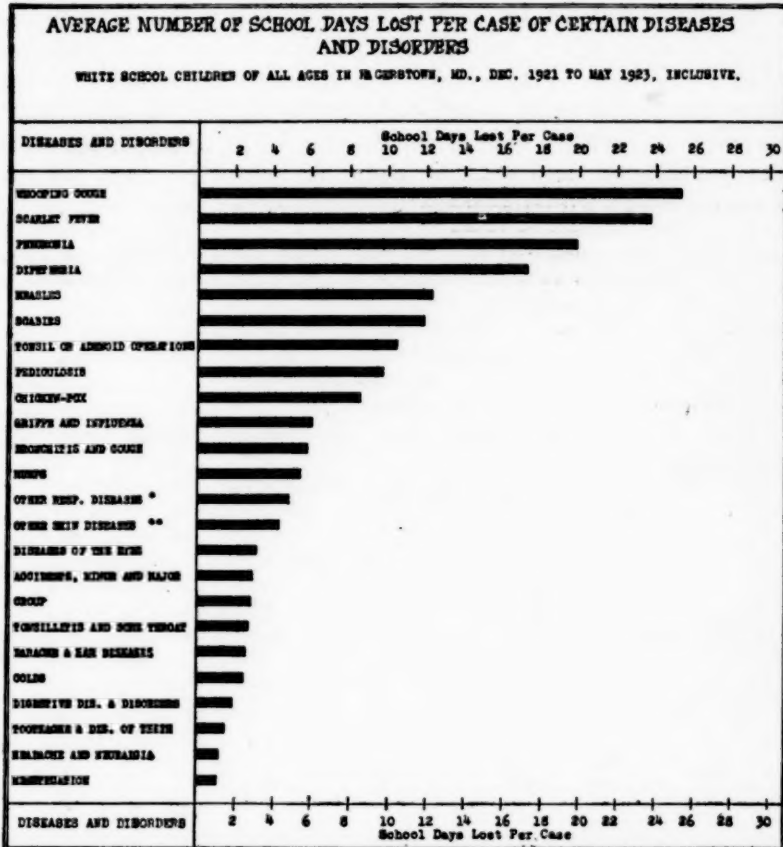
of the importance of the disease in terms of cases as compared with the days lost per child.

In point of frequency of cases as well as the days lost, common colds head the list; headaches come second and the digestive disorders are third so far as cases are concerned.

On the other hand, with regard to the number of days lost, "grippe" and influenza, tonsillitis, and sore throat, and measles each cause

considerably more absence than either headache or digestive disorders.

Case rates and days lost for each sex.—It will be remembered that for all causes combined both the case rates and the days lost per child for girls were quite consistently greater than for boys. In Figure 3 are shown the case rates for boys and girls by diseases. While these rates do not take into account differences in age distribution, it will be seen in Table 1 that the age distributions of the two sexes



* Includes respiratory diseases other than colds, grippe and influenza, tonsillitis and sore throat, bronchitis and cough, and pneumonia.

** Includes skin diseases other than scabies and pediculosis.

FIG. 4.

are so similar that the unadjusted rates for the boys and girls are comparable.

The case rates for a majority of the diseases considered are slightly higher for girls than for boys, although this is not true for colds, accidents, miscellaneous skin diseases, croup, whooping cough, chicken pox, pneumonia, diphtheria, and scabies. Whether or not

these differences between the sexes for different diseases are significant is best determined by an analysis according to age. In order to have a statistically satisfactory number of cases in certain age groups, this analysis is reserved until the third year's records, which are now being collected, are added to the data presented in this article.

Days lost per case.—On reference to Figure 1 it will be seen that there is no consistent difference between the sexes in the days lost per case because of illness from all causes. However, the days lost per case decreased considerably with age, particularly up to 10 or 11 years. Table 4 shows for each disease considered the days lost per case for all ages and in two age groups, viz, 10 years and under and 11 years and over. Figure 4 shows graphically for all ages the days lost per case. Whooping cough stands at the head of the list with 25.2 days' absence for each case of the disease. The averages for scarlet fever, pneumonia, and diphtheria are all above 15 days per case. Measles is next with an average of 12.2 days per case.

TABLE 4.—Average number of days lost from school per case of certain diseases—white school children in Hagerstown, Md., December, 1921, to May, 1923, inclusive.

Diagnosis.	Both sexes.			Boys.			Girls.		
	All ages.	5-10 years.	11 years and over.	All ages.	5-10 years.	11 years and over.	All ages.	5-10 years.	11 years and over.
SCHOOL DAYS LOST PER CASE.									
All causes.....	3.1	3.6	2.5	3.1	3.7	2.5	3.1	3.6	2.5
Measles.....	12.2	12.0	13.5	12.3	11.9	14.2	12.1	12.1	12.7
Mumps.....	5.4	5.0	7.0	3.0	4.0	1.0	6.7	5.4	13.0
Whooping cough.....	25.2	25.7	17.8	24.5	24.8	19.3	26.4	27.2	16.3
Chicken pox.....	8.5	8.4	7.0	8.5	8.5	7.7	8.5	8.3	6.0
Scarlet fever.....	23.6	24.3	23.0	28.1	29.7	9.0	20.4	19.3	26.5
Diphtheria.....	17.2	15.6	19.4	16.9	15.8	17.6	17.5	15.5	32.0
Croup.....	2.8	2.8	2.1	2.8	2.9	1.6	2.7	2.7	3.0
Colds.....	2.5	2.7	2.2	2.5	2.7	2.2	2.5	2.7	2.2
Grippe and influenza.....	6.0	6.5	5.5	6.0	6.6	5.4	6.0	6.4	5.5
Tonsillitis and sore throat.....	2.7	2.9	2.7	2.7	2.8	2.6	2.7	2.9	2.7
Bronchitis and cough.....	5.7	5.2	6.5	5.3	4.1	9.1	5.9	6.0	5.6
Pneumonia.....	19.7	19.7	22.3	18.3	19.1	16.3	21.4	20.4	30.3
Other respiratory diseases and disorders.....	4.8	6.7	3.3	6.2	10.4	4.3	4.2	5.0	2.8
Digestive diseases and disorders.....	1.9	2.0	1.8	1.7	1.8	1.6	2.1	2.1	2.0
Toothache and diseases of the teeth.....	1.5	1.6	1.5	1.5	1.5	1.5	1.6	1.6	1.6
Earache and ear diseases.....	2.6	2.5	2.8	2.5	2.5	2.5	1.6	2.5	3.0
Diseases and disorders of the eyes.....	3.1	3.3	2.8	3.2	3.4	3.2	2.9	3.2	2.3
Headache and neuralgia.....	1.2	1.2	1.1	1.2	1.3	1.1	1.1	1.2	1.1
Scabies.....	11.8	13.1	11.5	9.1	11.5	1.5	15.7	15.4	21.5
Pediculosis.....	9.7	8.4	11.8	7.1	7.1	4.1	10.5	9.0	11.8
Other skin diseases.....	4.3	4.5	3.9	4.6	4.7	.....	3.9	4.2	3.6
Accidents, minor and major.....	2.9	2.8	2.8	3.0	2.8	3.1	2.6	2.7	2.5
Tonsil or adenoid operations.....	10.4	10.1	10.7	7.9	8.3	5.6	13.1	12.4	15.0
Menstruation.....	.....	.....	.....	.....	.....	.....	1.1	.....	1.1
Other diseases and disorders.....	4.1	3.9	4.0	4.0	3.8	4.5	4.1	4.0	3.7
Unknown diagnosis.....	2.4	2.4	2.3	2.2	2.1	2.3	2.5	2.8	2.3

TABLE 4.—Average number of days lost from school per case of certain diseases—while school children in Hagerstown, Md., December, 1921, to May, 1923, inclusive—Continued.

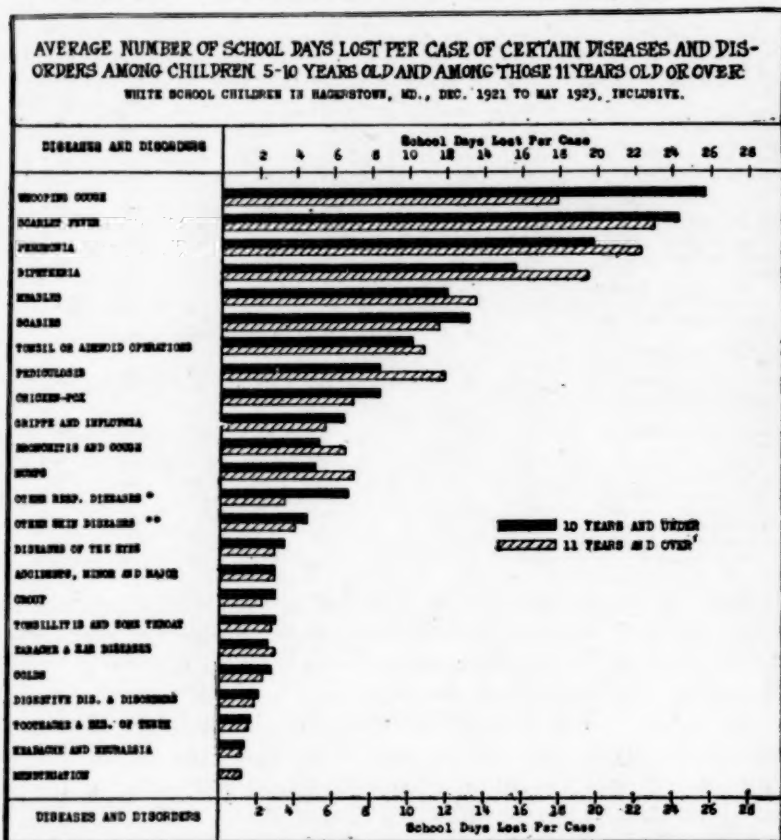
Diagnosis.	Both sexes.			Boys.			Girls.		
	All ages.	5-10 years.	11 years and over.	All ages.	5-10 years.	11 years and over.	All ages.	5-10 years.	11 years and over.
NUMBER OF CASES OF SICKNESS.									
All causes.....	17,847	9,029	7,563	8,479	4,386	3,442	9,368	4,643	4,121
Measles.....	404	366	26	198	177	14	206	189	12
Mumps.....	9	7	2	3	2	1	6	5	1
Whooping cough.....	105	96	6	65	59	3	40	37	3
Chicken pox.....	102	90	5	63	55	3	39	35	2
Scarlet fever.....	31	25	5	13	12	1	18	13	4
Diphtheria.....	30	20	8	16	8	7	14	12	1
Croup.....	128	119	8	71	65	5	57	44	3
Colds.....	5,691	3,099	2,221	2,898	1,521	1,175	2,793	1,578	1,046
Grippe and influenza.....	1,226	507	622	541	238	255	685	269	367
Tonsillitis and sore throat.....	1,743	817	805	753	378	310	990	439	495
Bronchitis and cough.....	88	52	27	31	22	7	57	30	20
Pneumonia.....	41	30	7	23	16	4	18	14	3
Other respiratory diseases and disorders.....	38	13	22	12	4	7	26	9	15
Digestive diseases and disorders.....	1,804	879	807	875	438	386	929	441	421
Toothache and diseases of the teeth.....	886	409	401	442	199	189	444	210	212
Earache and ear diseases.....	381	269	87	169	112	40	212	157	47
Diseases and disorders of the eyes.....	326	158	144	154	70	72	172	88	72
Headache and neuralgia.....	2,256	904	1,174	974	406	491	1,282	498	683
Scabies.....	25	18	4	15	11	2	10	7	2
Pediculosis.....	39	30	8	9	9	—	30	21	8
Other skin diseases.....	208	104	93	119	54	55	89	50	38
Accidents, minor and major.....	572	238	277	334	145	154	238	93	123
Tonsil or adenoid operations.....	63	49	11	32	27	5	31	22	6
Menstruation.....	—	—	—	—	—	—	129	—	124
Other diseases and disorders.....	828	254	251	219	116	88	309	138	143
Unknown diagnosis.....	994	475	439	450	241	169	544	234	270

It must be borne in mind, in considering the number of days lost per case for each disease, that the basis is the number of school days lost, and that an absence of 20 days means a total duration of at least four weeks. An absence of five days may mean just five days of illness, or it may mean as much as nine days if the onset of the case occurs on Saturday and the last day of illness on the second Sunday following. The intervention of holidays may also shorten the calculated duration of absence due to a case of illness. Cases developing during the Christmas holidays and with a total duration of two weeks extending a few days into the school days of January, therefore, are a source of error. The school days lost per case is, therefore, an understatement of the average disabling illness resulting from an attack of a given disease. In this study all cases of illness were included regardless of duration. The minimum time lost counted as an absence was one-half day.⁷

As already noted, the days lost per case of sickness from all causes combined decreased considerably with age. In Figure 5 is shown the number of days lost per case for each disease in children 10 years of

⁷ It frequently happens among school children, as well as among adults, that an illness does not cause continuous absence from school or work. In other words, a single case of illness may cause two or more absences with an interval between them during which the child attends school. For example, a child may be absent on account of a cold on Monday, be present on Tuesday and Wednesday, and again absent on account an exacerbation of the same cold on Thursday. An investigation of any large number of cases on this basis would be difficult and expensive. The data for this study do not differentiate exacerbations from new cases. Therefore, in making tabulations it seemed reasonable to assume that an absence on ac-

age and under and for those 11 years old and over. Of the 26 classifications shown in Table 4, the averages for 16 diseases are greater in the younger group; but for pneumonia, diphtheria, measles, tonsillectomy, pediculosis, bronchitis and cough, mumps, earache, and miscellaneous or other causes of sickness the average per case is larger



* Includes respiratory diseases other than colds, grippe and influenza, tonsillitis and sore throat, bronchitis and cough, and pneumonia.

** Includes skin diseases other than scabies and pediculosis.

FIG. 5.

in the older group. In the case of accidents the average is the same in the two groups. The number of cases of certain diseases was too small to be of much statistical value.

count of illness from the same cause should not be counted as a new case unless there was an interval of eight calendar days or longer between the end of one absence and the beginning of the next. An interval of seven calendar days (one calendar week) or less is, of course, an arbitrary limit which may classify in some instances two new cases as a single case, and in other instances make two new cases of a single case with two absences, such as a case with a relapse. However, in the choice of tabulating every absence as a separate case and the assumption of at least a week's interval between cases of the same disease as constituting a new case, the latter seemed to be the better procedure.

In the case of headache, toothache, and a few other similar conditions, exceptions were made to this general rule because of the usually short duration of an attack, and each continuous absence was counted as a case regardless of the interval between absences due to these disorders.

For the school year 1922-23 both absences and cases were tabulated, and Appendix Tables 10 and 11 show the number of both absences and cases for each disease and for each age for all diseases combined.

TABLE 5.—Case rates of sickness from certain causes by single years of age among white school children of both sexes in Hagerstown, Md., December, 1921, to May, 1923, inclusive.

Diagnosis.	All ages.	Age nearest birthday.											16 and over.	Unknown age.
		6 and under.	7	8	9	10	11	12	13	14	15	16 and over.		

CASES PER 1,000 CHILDREN PER SCHOOL YEAR OF 180 SCHOOL DAYS.														
All causes.....	2,333	2,848	2,779	2,721	2,541	2,297	2,134	2,300	2,106	2,073	1,887	1,995	2,091	
Measles.....	53	193	195	101	45	22	19	11	5	4	2	1	20	
Whooping cough.....	14	58	41	27	14	10	1	3	2			1	5	
Chicken pox.....	43	44	9	12	8	6	3	3					12	
Scarlet fever.....	4	7	10	4	4	3	1	3				1	2	
Diphtheria.....	4	7	10	4	4	3	1	3					3	
Croup.....	17	40	46	6	24	17	6	5	2				2	
All respiratory diseases and disorders.....	1,154	1,467	1,603	1,372	1,237	1,144	1,074	1,040	1,004	942	994	1,064	1,008	
Colds.....	744	1,111	1,059	1,017	919	744	613	639	584	582	589	685	618	
Grippe and influenza.....	160	150	157	151	139	145	151	138	134	140	171	210	162	
Other respiratory diseases and disorders.....	228	151	217	203	207	202	202	215	242	211	177	155	202	
Tonsillitis and sore throat.....	22	65	40	18	10	23	12	15	11	11	37	44	177	
Other respiratory diseases and disorders.....	256	297	290	279	299	211	310	287	263	264	209	194	177	
Toothache and diseases of the teeth.....	116	119	98	124	123	120	117	115	145	105	105	111	142	
Diarrhea and disorders of the bowels.....	43	121	79	57	43	47	27	46	54	50	37	28	46	
Headache and disorders of the eyes.....	43	121	79	57	43	47	27	46	54	50	37	28	46	
Skin diseases and disorders.....	205	154	204	261	327	334	333	308	265	235	270	250	297	
Accidents, minor and major.....	36	54	37	54	52	28	30	37	30	35	5	31	25	
Tonsil or adenoid operations.....	75	42	62	74	87	70	87	99	73	79	51	63	95	
Menstruation.....	8	16	22	11	11	12	4	3	5	2		3	8	
Other and unknown diseases and disorders.....	17	228	195	195	195	212	176	211	183	242	151	154	205	

RATIO OF THE RATE IN EACH AGE TO THE RATE FOR ALL AGES (ALL AGES=100).														
All causes.....	100	122	119	117	109	98	91	99	90	89	81	86	90	
Measles.....	100	364	368	191	85	42	36	21	9	8		2	38	
Whooping cough.....	100	414	293	193	100	71	7	21	14		14	7	26	
Chicken pox.....	100	338	423	169	62	46	23	38					92	
Scarlet fever.....	100	175	225	300	100	75	25	75	50			25	50	
Diphtheria.....	100	175	250	150	100	25	25	150	50				75	
Croup.....	100	235	271	265	141	100	35	29	100				12	
All respiratory disease and disorders.....	100	127	122	119	106	99	93	90	87	82	86	92	87	
Colds.....	100	149	134	126	109	96	83	86	87	78	79	92	83	
Grippe and influenza.....	100	88	99	94	87	91	94	86	124	91	119	131	101	
Tonsillitis and sore throat.....	100	66	91	118	117	115	130	109	106	89	78	68	89	

TABLE 5.—Case rates of sickness from certain causes by single years of age among white school children of both sexes in Hagerstown, Md., December, 1921, to May, 1923, inclusive—Continued.

Diagnosis.	All ages.	Age nearest birthday.											16 and over.	Unknown age.
		6 and under.	7	8	9	10	11	12	13	14	15			
RATIO OF THE RATE IN EACH AGE TO THE RATE FOR ALL AGES (ALL AGES=100)—Continued.														
Other respiratory diseases and disorders.....	100	295	182	73	45	105	55	68	45	50	168	64	123	
Digestive diseases and disorders.....	100	100	102	118	127	89	89	122	86	100	89	83	83	
Toothache and diseases of the teeth.....	100	103	84	107	109	111	101	99	125	91	76	109	109	
Earache and ear diseases.....	100	242	164	158	148	102	86	52	42	52	28	22	84	
Diseases and disorders of the eyes.....	100	65	107	133	100	109	63	107	126	116	86	65	93	
Headache and neuralgia.....	100	52	69	88	111	113	113	135	124	110	92	85	101	
Skin diseases and disorders.....	100	150	103	150	144	78	83	103	83	97	14	86	69	
Accidents, minor and major.....	100	56	83	99	116	93	116	132	97	105	68	84	127	
Tonsil or adenoid operations.....	100	200	275	138	138	150	50	38	63	63	25	38	63	
Menstruation.....	100	131	114	98	98	106	88	106	92	121	76	77	103	
Other and unknown diseases and disorders.....	100	100	100	100	100	100	100	100	100	100	100	100	100	
NUMBER OF CASES OF SICKNESS.														
All causes.....	17,847	1,223	2,179	2,231	1,816	1,580	1,441	1,484	1,277	1,123	811	1,427	1,255	
Measles.....	404	83	153	83	32	15	13	7	3	2	1	1	12	
Whooping cough.....	105	25	32	22	10	7	1	2	1	1	1	1	3	
Chicken pox.....	102	19	43	18	6	4	2	3	1	1	1	1	7	
Scarlet fever.....	31	3	7	10	3	2	1	2	1	1	1	1	1	
Diphtheria.....	30	3	8	5	3	1	1	4	1	2	1	1	2	
Croup.....	128	17	36	37	17	12	4	3	1	2	1	1	1	
All respiratory diseases and disorders.....	8,827	630	1,100	1,125	877	787	725	671	609	510	437	761	605	
Colds.....	5,691	477	1,783	1,768	1,255	491	415	412	336	315	253	400	371	
Whooping cough.....	1,226	60	124	124	99	100	102	89	120	79	82	150	97	
Scarlet fever.....	1,743	65	162	220	191	180	200	160	147	110	76	111	121	
Diphtheria.....	1,167	28	31	13	7	16	8	10	6	6	16	10	16	
Other respiratory diseases and disorders.....	1,804	102	189	229	214	145	142	185	123	128	90	139	118	
Digestive diseases and disorders.....	880	51	77	102	90	89	79	74	88	52	45	63	76	
Toothache and diseases of the teeth.....	381	52	64	65	53	35	29	17	13	14	6	8	25	
Earache and ear diseases.....	326	12	36	47	31	32	18	30	33	27	16	20	24	
Diseases and disorders of the eyes.....	2,256	66	160	214	234	200	225	257	221	176	116	179	178	
Headache and neuralgia.....	2,772	23	29	44	37	19	20	24	44	10	2	22	15	
Skin diseases and disorders.....	40	18	40	61	62	48	43	64	43	43	22	45	57	
Accidents, minor and major.....	572	18	17	9	8	8	3	2	3	9	2	2	3	
Tonsil or adenoid operations.....	63	7	17	9	8	8	3	2	3	9	2	2	3	
Menstruation.....	129	112	179	160	139	146	119	136	111	131	65	75	123	
Other and unknown diseases and disorders.....	1,531	112	179	160	139	146	119	136	111	131	65	75	123	

EXPOSURE.

Number of days of exposure.....	1,376,910	77,307	141,139	147,561	128,627	123,825	121,535	116,136	109,134	97,407	77,369	128,745	108,045
Number of full-time years.....	7,640.50	429.48	784.11	819.78	714.59	687.92	675.19	645.20	606.30	541.65	429.78	715.25	600.25

TABLE 6.—Days lost from certain causes of sickness by single years of age among white school children of both sexes in Hagerstown, Md., December, 1921, to May, 1923, inclusive.

Diagnosis.	All ages.	Age nearest birthday.											
		6 and under.	7	8	9	10	11	12	13	14	15	16 and over.	Unknown age.
SCHOOL DAYS LOST PER 1,000 CHILDREN PER SCHOOL YEAR OF 180 SCHOOL DAYS.													
All causes.....	7,205	12,673	11,600	9,836	8,121	6,439	5,655	6,042	5,301	5,345	4,955	4,576	6,441
Measles.....	643	2,475	2,194	1,214	301	301	247	136	30	100	49	34	240
Whooping cough.....	346	1,614	1,078	679	339	193	28	64	20	—	—	20	113
Chicken pox.....	113	312	465	199	90	47	28	25	—	—	—	—	125
Scarlet fever.....	96	114	187	369	81	48	37	53	—	—	—	—	17
Diphtheria.....	67	93	129	93	109	25	27	116	43	65	—	29	80
Croup.....	46	123	132	110	62	62	13	9	—	—	—	—	5
All respiratory diseases and disorders.....	3,640	4,959	4,817	4,588	4,040	3,514	3,164	3,151	2,953	2,778	2,942	2,952	3,377
Grippe and influenza.....	1,860	2,885	2,749	2,665	2,257	1,736	1,452	1,563	1,258	1,267	1,151	1,853	1,515
Colds.....	1,990	1,027	1,048	943	949	819	825	834	983	805	1,060	1,138	1,195
Other respiratory diseases and disorders.....	195	644	338	196	104	240	80	65	48	191	221	113	233
Tonsillitis and sore throat.....	625	404	673	784	691	720	807	687	665	514	511	348	524
Digestive diseases and disorders.....	445	551	439	576	585	372	415	526	332	538	329	273	384
Toothache and diseases of the teeth.....	178	215	133	182	204	222	167	148	225	172	193	127	190
Eczema and ear diseases.....	127	382	230	196	153	90	133	50	74	83	26	28	94
Diseases and disorders of the eyes.....	130	75	203	188	133	117	82	160	200	95	77	45	133
Headache and neuralgia.....	345	182	246	333	425	385	408	444	383	392	302	262	390
Skin diseases and disorders.....	205	271	275	278	358	195	124	226	204	145	16	89	107
Accidents, minor and major.....	213	115	269	169	265	176	183	276	230	251	243	137	317
Tonsil or adenoid operations.....	86	228	241	78	112	96	105	36	16	6	—	15	70
Menstruation.....	19	—	—	—	—	—	—	5	20	34	57	12	12
Other and unknown diseases and disorders.....	594	964	613	562	588	596	495	615	565	689	420	449	678

TABLE 6.—Days lost from certain causes of sickness by single years of age among white school children of both sexes in Hagerstown, Md., December, 1921, to May, 1923, inclusive—Continued.

Diagnosis.	All ages.	Age nearest birthday.											
		6 and under.	7	8	9	10	11	12	13	14	15	16 and over.	Unknown age.
RATIO OF THE RATE IN EACH AGE TO THE RATE FOR ALL AGES (ALL AGES=100).													
All causes.....	100	174	159	135	111	88	78	83	73	64	63	88	
Measles.....	100	385	341	189	90	47	38	21	16	5	5	43	
Whooping cough.....	100	466	312	196	98	56	8	18	5	14	6	33	
Chicken pox.....	100	276	412	176	80	42	25	22	6	14	6	111	
Scarlet fever.....	100	119	105	400	84	50	39	55	68	30	30	18	
Diphtheria.....	100	139	103	163	103	37	40	173	91	9	9	119	
Croup.....	100	267	287	259	135	135	28	20	9	9	9	1	
All respiratory diseases and disorders.....	100	196	132	120	111	97	87	87	81	81	81	93	
Colds.....	100	165	148	148	123	85	78	84	76	76	76	83	
Grippe and influenza.....	100	108	108	125	111	112	120	170	102	102	102	113	
Conjunctivitis and sore throat.....	100	330	178	101	53	123	41	33	25	113	56	119	
Other respiratory diseases and disorders.....	100	124	69	129	132	84	93	118	75	74	61	86	
Toothache and diseases of the teeth.....	100	121	121	102	115	125	94	83	126	20	22	74	
Earache and diseases of the ears.....	100	301	181	154	120	71	105	39	58	59	35	102	
Diseases and disorders of the eyes.....	100	58	156	145	102	90	63	123	154	73	76	113	
Headache and neuralgia.....	100	53	71	97	123	112	118	129	111	94	88	96	
Skin diseases and disorders.....	100	132	134	136	175	95	60	110	100	71	8	43	
Accidents, minor and major.....	100	54	98	79	124	83	86	130	108	118	114	149	
Tonsil or adenoid operations.....	100	265	260	91	130	112	122	42	19	7	17	81	
Menstruation.....	100	162	103	95	90	100	83	104	105	300	605	63	
Other and unknown diseases and disorders.....	100	162	103	95	90	100	83	104	105	71	76	114	
NUMBER OF DAYS LOST FROM SICKNESS.													
All causes.....	55,800.0	5,443.0	9,095.5	8,093.0	5,803.0	4,429.5	3,819.0	3,898.0	3,214.0	2,895.0	2,000.5	3,273.0	3,806.5
Measles.....	4,922.0	1,063.0	1,720.0	995.0	412.0	207.0	107.0	88.0	18.0	54.0	21.0	24.0	174.0
Whooping cough.....	2,645.0	693.0	845.0	557.0	242.0	133.0	19.0	41.0	12.0	21.0	14.0	68.0	68.0
Chicken pox.....	782.0	134.0	395.0	193.0	64.0	32.0	19.0	16.0	7.0	7.0	7.0	10.0	10.0
Scarlet fever.....	732.0	49.0	147.0	326.0	58.0	33.0	25.0	34.0	3.0	3.0	3.0	48.0	48.0
Diphtheria.....	315.0	40.0	101.0	76.0	78.0	17.0	18.0	75.0	29.0	33.0	21.0	21.0	21.0
Croup.....	554.0	53.0	103.5	90.5	44.5	42.5	9.0	6.0	2.0	2.0	2.0	3.0	3.0
All respiratory diseases and disorders.....	27,842.5	2,130.0	3,777.0	3,701.5	2,887.0	2,417.5	2,386.5	2,035.0	1,790.5	1,504.5	1,264.5	2,111.5	2,027.0
Colds.....	14,225.0	1,239.0	2,155.5	2,185.5	1,641.5	1,194.0	980.5	702.5	596.0	490.5	455.5	907.5	909.5
Grippe and influenza.....	7,340.0	1,441.0	821.5	773.0	678.0	563.5	545.0	443.0	403.0	278.5	219.5	613.0	634.0
Conjunctivitis and sore throat.....	4,784.5	173.5	527.5	642.5	493.5	495.0	545.0	443.0	403.0	278.5	219.5	249.0	249.0

Other respiratory diseases and disorders.....	1,493.0	276.5	272.5	160.5	74.0	165.0	54.0	42.0	20.0	103.5	95.0	81.0	140.0
Digestive diseases and disorders.....	3,407.0	236.5	112.0	472.0	410.0	253.0	280.0	339.5	201.5	291.5	141.5	165.0	250.5
Toothache and diseases of the teeth.....	1,360.0	92.5	112.0	140.5	145.5	153.0	112.5	35.5	136.5	93.0	83.0	91.0	96.0
Earache and ear diseases.....	1,975.0	154.0	180.5	160.5	109.0	62.0	58.5	32.5	43.0	45.0	11.0	20.0	56.5
Diseases and disorders of the eyes.....	998.0	32.0	159.0	154.0	95.0	82.5	55.5	103.5	121.5	51.5	153.0	32.5	80.0
Headache and neuralgia.....	2,635.5	78.0	193.0	273.0	304.0	265.0	273.5	260.5	222.5	176.5	150.0	187.5	234.0
Skin diseases and disorders.....	1,569.5	116.5	215.5	228.0	255.5	134.0	83.5	145.5	123.5	78.5	7.0	64.0	118.0
Accidents, minor and major.....	1,632.0	49.5	163.5	138.5	180.5	121.0	123.5	178.0	139.5	138.0	104.5	98.0	190.5
Tonsil or adenoid operations.....	1,657.0	98.0	189.0	64.0	80.0	66.0	71.0	23.0	10.0	3.0	24.5	11.0	42.0
Menstruation.....	147.0	-----	480.5	460.5	420.0	410.0	334.5	396.5	342.5	373.0	180.5	82.0	407.0
Other and unknown diseases and disorders.....	4,540.5	414.0	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

EXPOSURE.

Number of days' exposure.....	1,376,910	77,307	141,139	147,561	128,627	123,825	121,535	116,136	109,134	97,497	77,359	128,745	108,045
Number of full-time years.....	7,646.50	425.48	784.11	819.78	714.59	687.92	675.19	645.20	606.30	541.65	429.78	715.25	600.25

* AGE INCIDENCE OF CERTAIN DISEASES.

The age of greatest incidence for the different diseases is of potential significance with regard to school progress. It is of interest, therefore, to inquire at what school ages the different diseases have the greatest incidence. In Tables 5 and 6 are shown the frequency rates and the days lost per child for each age for certain diseases.

The actual rates for the different diseases for all ages combined are shown graphically in Figure 2. These rates vary so greatly that it is practically impossible to plot the age curves on a single scale. Therefore, for the purpose of showing the relative age incidence, the rates were reduced to an index basis by dividing the rate at each age by the rate for all ages combined. These indices are given in the second sections of Tables 5 and 6 and indices of the case rates plotted in Figure 6.

The height of the curves of the indices in Figure 6 do not represent the size of the rates; but the extent of the deviation of the curve from the base (100) does represent the extent of the variation in the rates at different ages from the rate for all ages combined. If there were no variations whatever, the curve would be a straight line at 100. The curves are representative, therefore, of the relative age incidence of the diseases.

In some instances the curves are irregular, but in most cases they do indicate certain general tendencies. Dotted lines have been drawn in Figure 6 to indicate in a very general way the tendencies apparently shown by the actual rates.

When the respiratory affections are considered as a whole, the incidence rate falls regularly from 6 to 14 years of age, but rises somewhat at 15 and older ages. The respiratory affections constitute about half of the total cases of illness from all causes, and the curve for all causes is therefore very similar to the one for respiratory affections. Colds, which comprise the greater part of the respiratory disorders, show, with some slight exceptions, the same general tendencies as are shown by all respiratory diseases, but the decline with age is somewhat more rapid.

The rates for "grippe" and influenza form almost a straight line to 12 years of age, but show considerable rise after that age. It is difficult to judge by the relatively limited influenza curve for the Hagerstown school children whether it is similar to the characteristic age curve of influenza for the epidemic of 1918. That there is a difference from the 1918 morbidity curve seems to be indicated, inasmuch as the 1918 curve, for the ages 5 to 19 years (5-year age groups) shows a downward trend for both boys and girls,⁸ whereas

⁸ Statistics of influenza morbidity, with special reference to certain factors in case incidence and case fatality. By W. H. Frost. Public Health Reports, vol. 35, No. 11, March 12, 1920, pp 584-597. (Reprint No. 586.)

the curve for influenza among the school children at Hagerstown for the period 1922-23 shows an upward trend. During this period practically all the influenza occurred in two epidemics which attained their peaks in March, 1922, and February, 1923, respectively.

The age curve for tonsillitis and sore throat is very different from the curves for the other respiratory diseases. It rises from 6 years of age to a maximum at 11 years, and declines to a point about equal to the 6-year rate at 16 years of age.

The curve for headache shows a rising rate up to 12 years and then declines. The rates for the digestive diseases and toothaches shows some tendency to rise in the middle years of school life and then decline after approximately 10 years of age.

The accident cases are made up chiefly of minor injuries of the hands and feet such as commonly happen to school children at play. Few serious accidents were reported. The age curve for these minor injuries rises in the middle years of school life, reaching a maximum at about 12 years, and then declines.

None of the diseases mentioned above shows anything like as much variation as do the children's diseases (fig. 6). Measles, whooping cough, chicken pox, scarlet fever, diphtheria, and croup all have very much higher incidence at the younger than at the older ages considered in this study. The incidence of whooping cough is greatest at 6 years; of measles, chicken pox, and diphtheria is somewhat greater at 7 than at 6 years, but falls off rapidly after 7 years; croup is high at 6, 7, and 8 years and then rapidly declines. The incidence of scarlet fever seems to increase to a maximum at about 8 years and then markedly declines.

SEASONAL VARIATION IN THE INCIDENCE OF CERTAIN DISEASES.

In Table 7 are shown the frequency rates and the days lost per child by months for all causes and for certain diseases. These rates are reduced to the basis of a school year of 180 school days, the rate for any month representing the rate that would have resulted if absence had continued throughout the school year at the rate which occurred during the month. Inasmuch as the different months vary in length, the rates are reduced to this common basis in order to make the monthly rates comparable.

TABLE 7.—Seasonal variation in the morbidity from certain diseases and disorders: Case incidence and days lost by months among white school children in Hagerstown, Md., December, 1921, to May, 1923, inclusive.

Diagnosis.	1921			1922					1923						
	De- cember.	Janu- ary.	Febru- ary.	March.	April.	May ¹	Septem- ber.	Octo- ber.	Novem- ber.	De- cember.	Janu- ary.	Febru- ary.	March.	April.	May ¹
CASES OF SICKNESS PER 1,000 CHILDREN PER SCHOOL YEAR OF 180 SCHOOL DAYS.															
All causes.....	1,892	2,187	2,333	3,024	2,005	1,149	1,216	1,339	2,026	2,385	3,364	4,504	2,843	2,432	1,477
All respiratory diseases and disorders.....	1,026	1,361	1,280	1,821	1,247	312	281	629	710	971	1,810	3,200	1,627	849	513
All other causes.....	866	826	1,052	1,203	1,213	837	935	1,210	1,316	1,415	1,554	1,303	1,216	1,583	964
Measles.....	12	2	37	66	86	162	2	2	2	2	95	101	64	125	26
Whooping cough.....	6	23	17	54	89	58	2	2	2	2	2	2	2	2	2
Chicken pox.....	17	12	12	19	6	2	2	4	18	24	21	19	10	13	20
Scarlet fever.....	6	2	2	2	6	2	2	11	9	9	14	6	2	5	1
Diphtheria.....	6	2	2	2	2	2	2	6	11	11	3	30	15	2	12
Croup.....	23	30	20	15	17	2	6	6	11	33	31	30	15	2	12
Colds.....	685	943	925	1,151	537	211	159	364	425	630	1,157	1,893	1,145	542	366
Grippe and influenza.....	17	54	74	342	66	11	100	252	32	54	273	995	244	62	12
Tonsillitis and sore throat.....	302	303	267	291	221	85	11	229	267	263	347	267	216	227	129
Other respiratory diseases and disorders.....	20	61	15	36	22	4	11	13	16	14	32	44	22	18	7
Digestive diseases and disorders.....	195	208	248	225	271	175	213	265	265	350	315	165	232	243	165
Headache and neuralgia.....	218	159	275	300	282	175	220	279	316	338	415	342	315	459	245
All other diagnoses.....	384	390	442	518	468	290	483	636	647	646	665	646	577	726	495
DAYS LOST PER 1,000 CHILDREN PER SCHOOL YEAR OF 180 SCHOOL DAYS															
All causes.....	4,393	6,983	6,767	11,130	7,675	6,900	2,376	4,223	5,185	6,650	9,520	18,019	9,570	6,512	3,438
All respiratory diseases and disorders.....	2,379	4,301	3,553	5,918	2,566	828	584	1,280	1,776	2,722	5,166	13,261	6,172	2,105	1,255
All other causes.....	2,014	2,680	3,213	5,212	5,109	6,072	1,792	2,943	3,409	3,928	4,354	4,758	3,398	4,407	2,183
Measles.....	38	19	238	1,046	742	231	15	35	35	25	730	1,615	688	1,638	330
Whooping Cough.....	26	329	444	1,381	1,869	2,146	9	18	139	146	233	189	101	93	168
Chicken pox.....	119	119	65	184	36	15	15	115	205	273	243	81	96	102	14
Scarlet fever.....	35	47	42	13	43	9	9	94	251	259	100	71	27	27	21
Diphtheria.....	70	19	49	101	42	2	2	9	42	86	61	135	51	23	21
Croup.....	68	64	37	37	37	2	2	9	42	86	61	135	51	23	21
Colds.....	1,385	2,673	2,092	3,128	1,312	494	284	634	915	1,502	2,743	5,577	3,114	1,150	776
Grippe and influenza.....	55	205	314	1,691	537	53	43	74	144	277	1,499	6,423	1,960	340	92
Tonsillitis and sore throat.....	859	873	758	835	526	247	240	512	601	834	1,892	6,779	1,960	558	335
Other respiratory diseases and disorders.....	78	550	389	265	191	34	18	60	116	108	182	482	427	57	52
Digestive diseases and disorders.....	373	425	459	415	462	366	309	487	618	798	630	288	422	426	282
Headache and neuralgia.....	251	211	370	444	317	215	265	310	339	422	436	375	374	511	282
All other diagnoses.....	1,033	1,450	1,545	1,775	1,575	968	1,185	1,874	1,670	1,901	1,921	2,003	1,645	1,589	1,085

¹ Including a few days of June.

TABLE 7.—Seasonal variation in the morbidity from certain diseases and disorders: Case incidence and days lost by months among white school children in Hagerstown, Md., December, 1921, to May, 1923, inclusive—Continued.

Diagnosis.	1921			1922					1923						
	De- cember.	Janu- ary.	Febru- ary.	March.	April.	May. ¹	Sep- tem- ber.	Octo- ber.	No- vem- ber.	De- cember.	Janu- ary.	Febru- ary.	March.	April.	May. ¹
NUMBER OF CASES OF SICKNESS.															
All causes.....	651	637	951	1,413	746	538	657	994	1,153	1,015	2,093	2,543	1,681	1,341	1,134
All respiratory diseases and disorders.....	353	383	522	851	366	146	152	340	404	413	1,126	1,807	962	498	394
All other causes.....	298	354	428	562	440	392	505	654	749	602	967	736	719	873	740
Measles.....	4	1	15	31	31	76	1	1	1	1	39	57	38	69	20
Whooping cough.....	2	10	7	25	32	27	1	2	10	10	13	11	6	7	15
Chicken pox.....	6	5	5	9	2	1	1	5	5	6	4	4	1	3	1
Scarlet fever.....	2	1	1	3	6	1	1	3	6	13	4	17	9	6	9
Diphtheria.....	8	13	8	7	6	1	3	5	11	4	4	17	9	6	9
Croup.....	236	404	377	538	194	99	86	197	242	272	720	1,069	677	259	281
Colds.....	6	23	30	160	24	5	6	12	18	23	170	562	144	34	9
Grippe and influenza.....	104	130	109	136	80	40	54	124	135	112	216	151	128	125	99
Tonsillitis and sore throat.....	7	26	6	17	8	2	6	7	9	6	20	25	13	10	5
Other respiratory diseases and disorders.....	67	89	101	105	98	82	115	143	168	149	196	93	137	134	127
Digestive diseases and disorders.....	75	68	112	140	102	82	124	151	180	154	238	193	186	253	188
Headache and neuralgia.....	132	167	180	242	169	122	261	344	368	275	414	365	341	400	380
All other diagnoses.....															
EXPOSURE.															
Number of children.....	3,643	3,672	3,669	3,657	3,613	3,372	5,117	5,121	5,122	5,106	5,091	5,082	5,068	4,962	4,935
School days in month.....	17	21	20	23	18	25	19	19	20	15	22	20	21	20	28
Total possible days of attendance.....	61,931	77,112	73,380	84,111	65,031	84,300	97,223	97,299	102,440	76,599	112,032	101,640	106,428	99,240	138,180
Full-time years of exposure.....	344.06	428.40	407.67	407.28	361.30	408.33	540.13	540.55	509.11	425.50	622.23	564.67	591.27	551.33	707.67

¹ Including a few days of June.

The number of days lost per child is based not on the days lost from cases arising in the given month but on the actual days lost from the given cause during the month regardless of the date of onset of the cases causing the absence. A close examination of the data indicates that the number of days lost from all causes combined and from certain causes, particularly colds and the respiratory affections, varies more than the case rates. This fact would indicate that colds were of a more severe type, as measured in duration per case, in

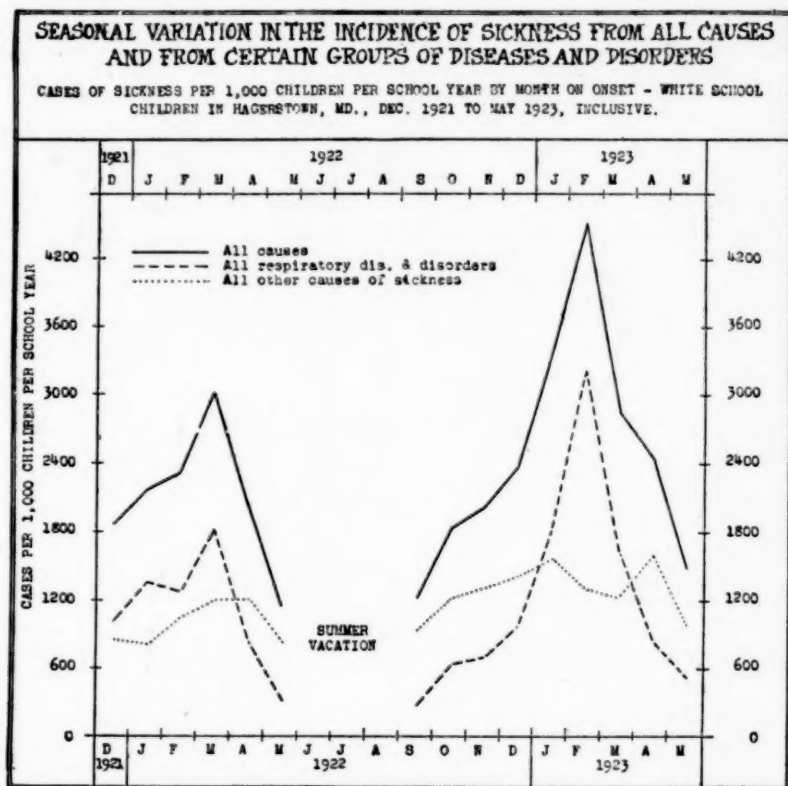


FIG. 7

some months than in others. A more detailed analysis of this phenomenon is reserved for a later report.

In Figure 7 are shown the case rates for all causes combined and for two large classes, viz, the respiratory diseases and all other causes. The seasonal variation in the nonrespiratory diseases is slight but that in the respiratory diseases is very marked. The peak is in March in 1922 and in February in 1923.

The rates for certain specific diseases are shown on a very much larger scale in Figure 8. Colds have a very definite peak at the times influenza was most prevalent—March, 1922, and February, 1923. There seems to be no very definite connection between the prevalence of tonsillitis and influenza.

During the spring of 1922 the frequency rates for measles and whooping cough were about equal, except in May. During the winter of 1922-23 only two cases of whooping cough were reported,

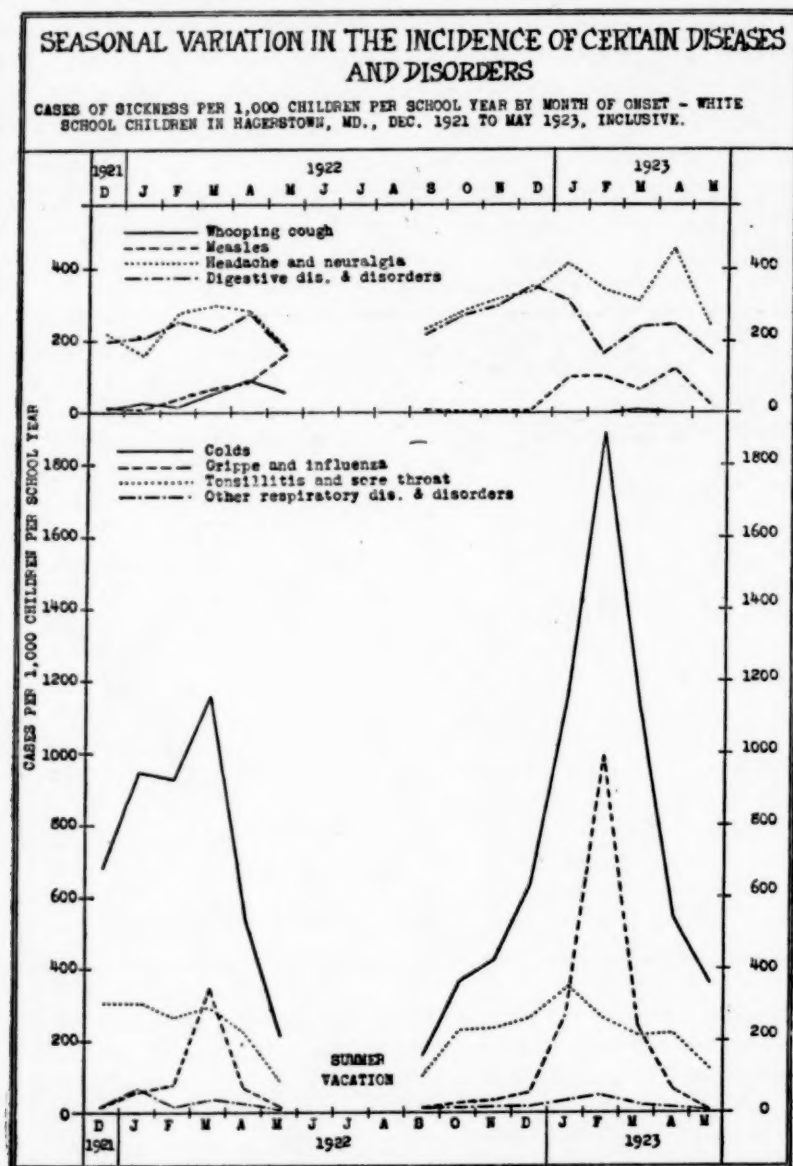


FIG. 8

but the frequency of measles, on the other hand, was about equal to that of the preceding year.

Headaches and the digestive disorders do not show any marked seasonal variation.

SUMMARY.

Records of sickness were kept for a large proportion of the school children in Hagerstown, Md., for the last six months of the 1921-22 school year, and for the entire school year of 1922-23.

The case rates and the days lost per child for all causes of sickness combined and the number of school days lost per case of illness were computed for each year of age. In all instances the rates declined as the age increased. The number of days lost per child showed the most rapid and the case rate the least rapid decline.

The case rates and the number of days lost per child were consistently higher for girls than boys, but the days lost per case of illness was practically the same for each sex.

An analysis of the causes of sickness showed that colds were the most common causative factor, both in case frequency of illness and days lost per child. As measured in days lost per child, influenza and measles were next, but the case frequency of headache, the digestive disorders, and tonsillitis and sore throat, was greater than that for either influenza or measles.

The duration of a case of illness, as measured by school days lost per case, was computed for each disease. Whooping cough, scarlet fever, pneumonia, diphtheria, and measles head the list in the order named. Common colds, the digestive disorders, toothache, and headache, some of the most common causes of illness as measured by case frequency, are of minor importance from the standpoint of the number of days lost per case.

The incidence of the common diseases of children decreased rapidly with age. The rates for tonsillitis and sore throat, headache, and accidents increased up to 11 or 12 years and then declined. Common colds decreased until about 13 years of age, after which there was a slight increase. Toothache and the digestive disorders showed little tendency to vary with age, though possibly increasing slightly up to about 10 years and then declining.

The variation in the rates for the different months was large for the respiratory affections but not nearly so marked for the non-respiratory conditions. The highest rates obtained during March in 1922 and during February in 1923. They were clearly associated with the epidemics of colds and influenza which occurred during those months.

Appendix.

The following tables show in greater detail the data used in this study. Table 8 shows rates for all causes by age, and Table 9 shows rates for all ages by cause for each of the two school years separately.

Tables 10 and 11 show cases and absences separately for the school year 1922-23. Table 12 shows certain rates and percentages that may be used for comparison with other studies in which the rates are calculated on a basis different from that adopted for this study.

TABLE 8.—Morbidity from all causes by age in the two school years, December, 1921, to May, 1922, and September, 1922, to May, 1923—white school children of both sexes in Hagerstown, Md.

School year.	Age nearest birthday.													16 and over.	Unknown age.
	All ages.	6 and under.	7	8	9	10	11	12	13	14	15				
CASES PER 1,000 CHILDREN PER SCHOOL YEAR OF 180 SCHOOL DAYS.															
1921-22.....	2,114	2,806	2,470	2,153	2,436	2,016	1,803	1,694	1,734	1,687	1,829	1,730	2,632		
1922-23.....	2,438	2,835	2,954	3,033	2,592	2,453	2,253	2,447	2,260	2,254	1,919	2,101	2,003		
SCHOOL DAYS LOST PER 1,000 CHILDREN PER SCHOOL YEAR OF 180 SCHOOL DAYS.															
1921-22.....	7,455	14,593	12,657	9,990	8,257	5,729	5,069	5,543	4,031	4,476	4,198	3,810	10,178		
1922-23.....	7,218	11,513	11,000	9,749	8,055	6,816	5,948	6,281	5,825	5,751	4,908	4,955	5,855		
SCHOOL DAYS LOST PER CASE OF SICKNESS.															
1921-22.....	3.53	5.02	5.12	4.64	3.39	2.85	2.68	2.78	2.32	2.65	2.29	2.14	3.84		
1922-23.....	2.96	4.06	3.72	3.21	3.11	2.78	2.64	2.57	2.38	2.55	2.56	2.36	2.92		
NUMBER OF CASES OF SICKNESS.															
1921-22.....	5,236	496	701	632	566	485	424	417	307	291	280	421	216		
1922-23.....	12,611	727	1,478	1,590	1,250	1,095	1,017	1,067	970	832	531	1,006	1,039		
NUMBER OF DAYS LOST FROM SICKNESS.															
1921-22.....	18,467.0	2,499.5	3,592.0	2,937.0	1,918.5	1,331.0	1,135.5	1,150.5	713.5	772.0	642.5	901.0	826.0		
1922-23.....	37,333.0	2,952.5	5,565.5	5,131.0	3,884.5	3,048.5	2,683.5	2,738.5	2,500.5	2,123.0	1,558.0	2,372.0	3,037.5		

NUMBER OF INDIVIDUAL CHILDREN.

1921-22.....	3,712	256	417	433	343	357	338	313	265	257	235	367	131
1922-23.....	5,126	252	491	517	477	442	446	434	426	306	276	475	524

NUMBER OF DAYS OF EXPOSURE.

1921-22.....	445,868	31,147	51,084	52,826	41,823	43,314	40,325	37,651	31,862	31,048	27,552	42,572	14,661
1922-23.....	931,012	46,160	90,655	94,752	86,804	80,511	81,210	78,485	77,272	66,449	49,807	86,173	93,384

NUMBER OF FULL-TIME SCHOOL YEARS OF EXPOSURE.

1921-22.....	2,477.04	173.04	283.50	293.49	232.35	240.63	224.03	209.17	177.01	172.49	153.07	226.51	81.45
1922-23.....	5,172.46	256.44	500.31	526.26	482.24	447.28	451.17	436.03	429.29	369.16	276.71	478.74	518.80

TABLE 9.—*Morbidity from certain causes among white school children of both sexes and all ages in the two school sessions, December, 1921, to May, 1922, and September, 1922, to May, 1923, in Hagerstown, Md.*

Diagnosis.	Cases per 1,000 children per school year of 180 school days.		School days lost per 1,000 children per school year of 180 school days.		School days lost per case of sickness.		Number of cases of sickness.		Number of days lost from sickness.	
	1921-22	1922-23	1921-22	1922-23	1921-22	1922-23	1921-22	1922-23	1921-22	1922-23
All causes.....	2,114	2,438	7,455	7,218	3.53	2.96	5,236	12,611	18,467.0	7,333.0
Measles.....	64	48	798	570	12.51	11.98	158	246	1,976.0	2,946.0
Mumps.....	1	1	6	6	8.00	4.71	2	7	16.0	33.0
Whooping cough.....	42	1	1,039	14	24.99	35.50	103	2	2,574.0	71.0
Chicken pox.....	11	14	91	124	8.04	8.69	28	74	225.0	643.0
Scarlet fever.....	2	5	24	130	11.80	25.88	5	26	59.0	673.0
Diphtheria.....	2	5	38	81	18.80	16.84	5	25	94.0	421.0
Croup.....	17	16	44	47	2.66	2.87	43	85	110.0	244.0
Colds.....	746	743	1,874	1,853	2.51	2.49	1,848	3,843	4,642.0	9,583.0
Grippe and influenza.....	160	189	502	1,179	5.02	6.23	248	978	1,244.0	6,066.0
Tonsillitis and sore throat.....	242	221	676	601	2.79	2.72	599	1,144	1,674.0	3,110.5
Bronchitis and cough.....	16	9	70	59	5.03	6.28	39	49	196.0	307.5
Pneumonia.....	8	4	138	90	18.00	21.00	19	22	342.0	464.0
Other respiratory diseases and disorders.....	3	6	37	18	11.50	3.05	8	30	92.0	91.5
Digestive diseases and disorders.....	219	244	416	460	1.90	1.88	542	1,262	1,030.0	2,377.0
Toothache and diseases of the teeth.....	88	129	145	193	1.64	1.50	219	667	359.5	1,000.5
Earache and ear diseases.....	44	53	113	134	2.59	2.55	108	273	280.0	695.0
Diseases of the eyes.....	58	35	198	98	3.41	2.79	144	182	491.0	507.0
Headache and neuralgia.....	234	324	303	364	1.30	1.12	579	1,677	750.5	1,885.0
Scabies.....	7	2	76	20	11.06	13.25	17	8	188.0	106.0
Pediculosis.....	8	4	70	40	9.08	10.35	19	20	172.5	207.0
Other skin diseases.....	15	33	71	139	4.66	4.23	38	170	177.0	719.0
Accidents, minor and major.....	45	89	131	253	2.92	2.84	111	461	324.0	1,308.0
Tonsil or adenoid operations.....	12	7	127	66	10.86	10.06	29	34	315.0	342.0
Menstruation.....	16	17	20	19	1.21	1.11	40	89	48.5	98.5
Other diseases and disorders.....	67	70	327	260	4.88	3.71	166	362	810.0	1,344.0
Unknown diagnosis.....	48	169	112	398	2.33	2.35	119	875	277.0	2,060.5
									1921-22	1922-23
Number of individual children.....									3,712	5,378
Number of days of exposure.....									445,868	931,042
Full-time school years of exposure.....									2,477.04	5,172.46

TABLE 10.—*Excess of absences over cases of illness from certain diagnoses, days lost per case and days lost per absence—white school children of both sexes and all ages in Hagerstown, Md., September, 1922, to May, 1923, inclusive.*

Diagnosis.	Number of cases.	Number of absences.	Number of absences not counted as cases.	Percentage of absences not counted as cases to number of cases.	School days lost per case.	School days lost per absence.
All causes.....	12,611	13,269	658	5.2	2.96	2.81
Measles.....	246	251	5	2.0	11.98	11.74
Mumps.....	7	7			4.71	4.71
Whooping cough.....	2	2			35.50	35.50
Chicken pox.....	74	74			8.69	8.69
Scarlet fever.....	26	26			25.88	25.88
Diphtheria.....	25	26	1	4.0	16.84	16.19
Croup.....	85	88	3	3.5	2.87	2.77
Colds.....	3,843	4,186	343	8.9	2.49	2.29
Grippe and influenza.....	978	1,081	103	10.5	6.23	5.64
Tonsillitis and sore throat.....	1,144	1,169	25	4.8	2.72	2.59
Bronchitis and cough.....	49	50	1	2.0	6.28	6.15
Pneumonia.....	22	22			21.69	21.69
Other respiratory diseases and disorders.....	30	32	2	6.7	3.05	2.86
Digestive diseases and disorders.....	1,262	1,312	50	4.0	1.88	1.81
Toothache and diseases of the teeth.....	667	687	20	3.0	1.50	1.46
Earache and ear diseases.....	273	284	11	4.0	2.55	2.45
Diseases and disorders of the eyes.....	182	195	13	7.1	2.79	2.60
Headache and neuralgia.....	1,677	1,683	6	.4	1.12	1.12
Scabies.....	8	8			13.25	13.25
Pediculosis.....	20	25	5	25.0	10.35	8.28
Other skin diseases and disorders.....	170	176	6	3.5	4.23	4.09
Accidents, minor and major.....	461	476	15	3.3	2.84	2.75
Tonsil or adenoid operations.....	34	34			10.06	10.06
Menstruation.....	89	89			1.11	1.11
Other diseases and disorders.....	362	381	19	5.2	3.71	3.53
Unknown diagnosis.....	875	875			2.35	2.35

TABLE 11.—*Excess of absences over cases of illness from all causes, days lost per case, and days lost per absence, by age—white school children of both sexes in Hagerstown, Md., September, 1922, to May, 1923, inclusive.*

	All ages.	Age nearest birthday.											Un- known age.
		6 and under.	7	8	9	10	11	12	13	14	15	16 and over.	
Number of cases.....	12,611	727	1,478	1,599	1,250	1,095	1,017	1,067	970	832	531	1,006	1,039
Number of absences.....	13,269	763	1,569	1,707	1,330	1,144	1,051	1,128	1,018	861	556	1,057	1,085
Excess of absences over cases.....	658	36	91	108	80	40	34	61	48	29	25	51	46
Percentage of excess to number of cases.....	5.2	5.0	6.2	6.8	6.4	4.5	3.3	5.7	4.9	3.5	4.7	5.1	4.4
School days lost per case.....	2.96	4.06	3.72	3.21	3.11	2.78	2.64	2.57	2.58	2.55	2.56	2.36	2.92
School days lost per absence.....	2.81	3.87	3.51	3.01	2.92	2.66	2.55	2.43	2.46	2.47	2.44	2.24	2.80

TABLE 12.—Morbidity case and severity rates from certain causes per 10,000 days enrolled and the percentage of cases and of days lost due to each diagnosis—white school children of both sexes and all ages in Hagerstown, Md., December, 1921, to May, 1923, inclusive.

Diagnosis.	Cases per 10,000 days enrolled.		School days lost per 10,000 days enrolled.		Percentage of cases from all causes due to each diagnosis.	Percentage of days lost from all causes due to each diagnosis.	Number of cases.		Number of days lost.	
	All cases.	Cases causing a loss of 2 days or longer.	All cases.	Cases causing a loss of 2 days or longer.			All cases.	Cases causing a loss of 2 days or longer.	All cases.	Cases causing a loss of 2 days or longer.
All causes.....	129.6	69.6	405.3	354.0	100.0	100.0	17,847	9,582	55,800.0	48,748.0
Measles.....	2.9	2.9	35.7	35.7	2.3	8.8	404	403	4,922.0	4,921.0
Mumps.....	.1	.1	.4	.3	.1	.1	9	8	49.0	48.0
Whooping cough.....	.8	.8	19.2	19.2	.6	4.7	105	105	2,645.0	2,645.0
Chicken pox.....	.7	.7	6.3	6.3	.6	1.6	102	101	868.0	867.0
Scarlet fever.....	.2	.2	5.3	5.3	.2	1.3	31	31	732.0	732.0
Diphtheria.....	.2	.2	3.7	3.7	.2	.9	30	30	515.0	515.0
Croup.....	.9	.5	2.6	2.2	.7	.6	128	74	354.0	306.0
Colds.....	41.3	23.3	103.3	86.9	31.9	25.5	5,091	3,207	14,225.0	11,972.0
Grippe and influenza.....	8.9	8.6	53.3	53.0	6.9	13.2	1,226	1,186	7,340.0	7,302.0
Tonsillitis and sore throat.....	12.7	7.9	34.7	30.4	9.8	8.6	1,743	1,090	4,784.5	4,192.0
Bronchitis and cough.....	.6	.5	3.7	3.6	.5	.9	88	75	503.5	492.0
Pneumonia.....	.3	.3	5.9	5.9	.2	1.4	41	41	806.0	806.0
Other respiratory diseases and disorders.....	.3	.2	1.3	1.3	.2	.3	38	26	183.5	173.5
Digestive diseases and disorders.....	13.1	5.0	24.7	18.0	10.1	6.1	1,804	693	3,407.0	2,483.0
Toothache and diseases of the teeth.....	6.4	2.0	9.9	6.3	5.0	2.4	886	280	1,360.0	869.0
Ears, nose and ear diseases.....	2.8	1.4	7.1	5.8	2.1	1.7	381	187	975.0	803.0
Diseases and disorders of the eyes.....	2.4	1.5	7.2	6.5	1.8	1.8	326	211	998.0	900.0
Headache and neuralgia.....	16.4	3.4	19.1	9.0	12.6	4.7	2,256	463	2,635.5	1,237.5
Scabies.....	.2	.2	2.1	2.1	.1	.5	25	24	294.0	293.0
Pediculosis.....	.3	.3	2.8	2.7	.2	.7	39	36	379.5	377.0
Other skin diseases and disorders.....	1.5	1.0	6.5	6.1	1.2	1.6	208	142	896.0	835.5
Accidents, minor and major.....	4.2	2.3	11.9	10.2	3.2	2.9	572	311	1,632.0	1,409.5
Tonsil or adenoid operations.....	.5	.4	4.8	4.8	.4	1.2	63	61	657.0	655.0
Menstruation.....	.9	.2	1.1	.4	.7	.3	129	27	147.0	68.0
Other diseases and disorders.....	3.8	2.3	15.6	14.3	3.0	3.9	528	317	2,154.0	1,973.0
Unknown diagnosis.....	7.2	3.3	17.0	13.6	5.6	4.2	994	453	2,337.5	1,873.0

A STUDY OF RAGWEED POLLEN EXTRACTS FOR USE IN THE TREATMENT OF RAGWEED POLLEN HYPERSENSITIVENESS.

By Charles Armstrong, Passed Assistant Surgeon, and W. T. Harrison, Passed Assistant Surgeon, United States Public Health Service.

Numerous authors have reported gratifying results in the treatment of hay fever by means of repeated hypodermic injection of extracts made from the specific pollen to which the patient is sensitive. Pollen extracts are, however, prepared in many different ways. Different methods of collecting and cleaning the pollen granules result in variations in the degree of maturity and purity of the stock pollen from which the extracts are prepared. Various extractives and preservatives are employed, many different methods of extraction are used, and the time employed in the extraction varies. Some experimenters have attempted by various means to purify and concentrate the extracts. As a result of this lack of uniformity in the preparation of extracts from any given pollen, a considerable variation in potency, keeping qualities, etc., may be expected.

The work herein reported was carried out with the pollen of ragweed (*Ambrosia elatior* and *Ambrosia trifida*), since ragweed is the commonest cause of hay fever in the eastern portion of the United States; and it was undertaken in an effort to select from a large number of variously prepared pollen extracts one which would possess the qualities of an extract suitable for use in treatment. Uniformity of strength in different batches of extract, a high degree of specificity and potency, good keeping qualities, and a tendency to inhibit bacterial growth are among the qualities deemed desirable in such an extract.

METHODS.

Clock (1), in 1918, demonstrated that rabbits could be immunized with an extract of ragweed pollen and thus bring about the production of antibodies capable of fixing complement. The work herein reported represents a further application of this method to the study of ragweed pollen extracts.

PROCEDURE.

Immunization of rabbits.—Adult rabbits were injected intraperitoneally on alternate days, for a period of about three weeks, with increasing amounts of ragweed pollen extract (5 to 50,000 units¹). The animals were bled on the seventh day.

Complement fixation—Titration of antigen.—Immune rabbit serum was employed in 0.011 c. c. amounts. Antigen (pollen extract) was used in amounts of from 5 to 100 pollen units. Two units of anti-sheep amboceptor² were used. Guinea pig complement titrated in the presence of an average dose of antigen was utilized in 2-unit³ amounts. Sheep cells were used as an indicator (0.2 c. c. of 1.2 per cent suspension of packed cells). The total volume of fluid in each tube was 1.1 c. c.

Fixation was carried out at an ice-box temperature of from 5 to 8° C. for 18 hours.

This test gave clean-cut results and was highly delicate, with a potent antigen and antiserum fixation of complement occurring with as little as 5 to 10 units of the extract.

POLLEN A COMPLEX ANTIGENIC SUBSTANCE.

When the structure and physiology of a pollen granule are considered, it seems probable that it would contain more than a single

¹ A unit as used in this paper refers to the extract from 0.000001 gm. of dry mature pollen as defined by L. Noon (2).

² A unit of amboceptor is defined as the least amount giving complete hemolysis of 0.2 c. c. of 1.2 per cent suspension of sheep cells in the presence of 0.2 c. c. of 1:20 dilution of guinea pig complement after one hour in the 37.5° C. water bath.

³ A unit of complement is defined as the least amount, following a preliminary incubation of one hour at 37.5° C., causing complete hemolysis of 0.2 c. c. of 1.2 per cent sheep cell suspension in the presence of 2 units of amboceptor and an average dose of antigen (50 units).

antigenic principle, and this appears to be indicated from the following observations:

Two rabbits, No. 1 and No. 2, were immunized in the same manner at the same time and with the same ragweed pollen extract which we will designate as extract "A."

Antisera from rabbits No. 2 and No. 3, when tested against extract "A," were found to be of equal strength, each fixing complement in the presence of a minimal dose of 20 units of the extract.

When, however, extract "B," prepared in a slightly different manner, was substituted for extract "A," antiserum from rabbit No. 2 fixed complement in the presence of 10 units of antigen "D," whereas antiserum from rabbit No. 3 failed to fix complement in the presence of antigen "D" used in doses ranging from 5 to 100 pollen units. This observation was repeatedly checked and proved constant for these antisera and extracts. The explanation of this phenomenon would seem to be that the two rabbits had produced their predominating antibodies against slightly different fractions of the antigen, and that extracts "A" and "D" contained these antigenic fractions in different proportions.

Moreover, when a series of extracts was prepared from equal quantities of pollen by using various extractives, and was tested for complement binding power against a single antiserum, quantitative variations were common. Some extracts gave strong and others weak binding of complement, while in still others this property of the extract, present at first, was soon entirely lost. Again, mainly in extracts in which an effort was made at concentration or purification, the complement-binding properties were entirely absent.

It was found, moreover, that when an extract containing 10,000 units per c. c. in 2 parts glycerine and 1 part Coca's fluid,⁴ was diluted fifty times with saline, and heated to 65° C. for 30 minutes, it lost entirely its complement-binding power for its original antiserum. This heated extract was still capable, however, of producing an antiserum in rabbits which was specific for itself. The complement-fixing bodies were considerably more resistant to the action of heat when the latter was applied to the undiluted glycerinated extract.

COMPLEMENT-FIXING PROPERTIES OF VARIOUS COMMERCIAL EXTRACTS.

In view of the quantitative and qualitative variations noted in the complement binding power of various experimental extracts, it was deemed desirable to test these properties in commercial products. For this purpose several commercial extracts prepared from short ragweed pollen were secured and used for the immunization of rabbits. With the antisera thus produced and with the various extracts, cross tests were made. The results are shown in Table 1.

⁴ Coca's fluid is prepared by dissolving sodium chloride 5 gms. and sodium bicarbonate 2.7 gms. in distilled water 1,000 c.c.

TABLE 1.—*Cross complement fixation with short ragweed pollen extracts and antisera.*

[Figures indicate binding with minimum number of units noted. Minus sign indicates no binding.]

Rabbit antiserum produced against extract.	No. 8. Experimental extract (same as No. 7, except heated to 65° C. for 30 minutes).	No. 7. Experimental extract.	No. 6. Commercial.	No. 5. Commercial.	No. 4. Commercial.	No. 3. Commercial.	No. 2. Commercial.	No. 1. Commercial.	Short ragweed pollen extract.
	Units.	Units.	Units.	Units.	Units.	Units.	Units.	Units.	Units.
No. 1. Commercial.....	—	—	—	—	—	—	—	—	—
No. 1. Commercial (second rabbit).....	—	¹ 100	—	—	—	—	—	—	—
No. 2. Commercial.....	—	10	—	—	—	—	20	—	—
No. 3. Commercial.....	—	—	—	—	—	—	—	—	—
No. 3. Commercial (second rabbit).....	—	—	—	—	—	—	—	—	—
No. 4. Commercial.....	—	—	—	—	—	—	—	—	—
No. 4. Commercial (second rabbit).....	—	—	—	—	—	—	—	—	—
No. 5. Commercial.....	—	—	—	—	—	—	—	—	—
No. 7. Experimental extract.....	—	10	¹ 100	—	—	—	20	—	—
No. 8. Experimental extract (same as No. 7 except heated to 65° for 30 minutes).....	60	—	—	—	—	—	—	—	—

¹ Partial.

It may be noted in Table 1 that the commercial extracts which were used failed, with one exception, to produce antibodies in rabbits. The same dosage, measured in units, was used in each case and the methods of immunization were identical. This method uniformly gave potent antisera in a considerable number of animals immunized with extracts Nos. 2, 7, and 8 of Table 1. The character of the extract probably accounts for the failure of Cook, Flood, and Coca (3) in their attempts to produce complement-fixing antibodies in rabbits in 1917.

Extract No. 7, Table 1, was selected for further study on account of its strength and polyvalency when tested with antisera produced against a large number of experimental extracts and on account of its potency in producing dermal reactions in sensitive individuals. A dose of one thirty-two hundredth of a unit of this extract gave a definite intra-dermal reaction in sensitive cases.

This extract was prepared by extracting ripe, dry, pollen granules in a mixture of 2 parts glycerin⁵ and 1 part Coca's fluid, a combination suggested by Dr. H. S. Bernton.⁶

Preparation of the extract.—The mature pollen granules were collected by placing the flowering plants in pails of water in a still room, with the blossoms projecting over waxed paper. The pollen was prepared for extraction by passing through a 200-mesh sieve, followed by drying over sulphuric acid. If not used at once, the

⁵ Clock had previously made use of glycerin as a preservative for pollen extract.⁶ In view of the apparent lability of the complement-binding property of some extracts it was deemed desirable to have the preservative action of glycerin present during the extraction rather than add it later.

pollen was weighed, and sealed in glass ampules under reduced pressure. Extraction was allowed to continue for eight days at room temperature,⁷ with occasional shaking. The extract was then filtered, and, if sterile, was considered ready for use.

Grinding of the pollen in a mortar with quartz sand, etc., uniformly resulted in a loss of complement-binding power in the extract—probably due to the fact that the foreign material removed portions of the antigenic fraction by absorption.

EXTRACTS PREPARED WITH NASAL SECRETIONS.

In view of the quantitative and qualitative variations noted in differently prepared extracts it was felt that the use of strong chemicals and rough manipulations in the preparation of extracts should be reduced to a minimum. In other words, it was felt that an extract for specific treatment should imitate the extract secured by the patient when pollen granules gain access to his nasal mucous membranes. In order that we might study this extract, a quantity of nasal secretion collected from several patients during hay fever attacks was secured, promptly pooled, and ripe pollen added.

In order to imitate natural conditions, the extraction was terminated after 15 minutes, the material was passed through a Berkefeld filter, and 50 per cent glycerin was added as a preservative. This extract was then tested against antisera produced by the injection of various pollen extracts into rabbits. It was found that the extract was strongly antigenic for certain antisera but gave no binding with others. The antisera produced against the Coca's fluid and glycerin extract bound complement with this nasal secretion in 10 unit amounts.

ANTIBODIES IN THE SERA OF PATIENTS SENSITIVE TO RAGWEED POLLENS.

Clowes (5), Walker (6), and others have reported the occasional finding of complement-binding antibodies in the sera of hay fever and asthma patients, and it was felt that perhaps the character of the antigen was the reason for the usually negative results.

Tests were made with the above-described glycerin—Coca's fluid antigen—since it seemed similar to the nasal-secretion extract and also with other extracts, including a suspension of the whole pollen. A total of 70 patients were tested, some before and some after treatment, using varying amounts of serum and antigen and employing both native and guinea-pig complement. The results were uniformly negative. That there was nothing in the human sera which prevented fixation is indicated by the fact that with rabbit antisera fixation took place readily in the presence of human serum. We were also unable to demonstrate complement-fixing antibodies in guinea pigs tested at varying intervals following intraperitoneal injections of extract.

⁷ Complement-fixation tests showed the extraction to be complete at the end of five days when 1 gram of pollen and 100 mls of extractive were employed; but when 2 grams of pollen were used with the same volume of extractive an increase in complement-binding power was noted to the seventh day.

KEEPING QUALITIES.

Since the glycerinated extract was highly potent and seemed similar to that causing hay fever in nature, it was felt that it should be a suitable extract for treatment, provided its keeping qualities were good.

Bottles of concentrated extract allowed to stand at room temperature showed no appreciable loss of complement-fixing power after 144 days.

Tests were also made of the keeping qualities of the extract in dilution (100 units per c. c. in 0.85 per cent saline) and at varying hydrogen ion concentrations of from pH 9.2 to 5.8 when left at ice-box temperature. Slight deterioration was first noted after 114 days. Buffered solutions were not employed, and the pH values varied somewhat. However, the evidence seemed conclusive that the antigen tended to be very stable in dilution and that the hydrogen ion concentration in the range tested exerted no marked influence upon the keeping qualities.

The results of treatment likewise indicate the stability of the glycerinated extract, since, when a dilution used for some days in the treatment of a patient is replaced by a new dilution, the transfer is without reactions, thus indicating a uniform strength of the two preparations. (The results of treatment with this extract will be reported later.)

COMPLEMENT-FIXING ANTIBODIES RELATIVELY LABILE.

That the complement-fixing antibodies are a sensitive criterion of the keeping quality of an extract is indicated by the fact that change in the property of complement fixation is one of the first alterations in an extract to become apparent, since an extract may lose this property naturally or have it destroyed by heating without apparent loss in its power to produce skin reactions in sensitive individuals.

RELATIONSHIP OF SHORT AND GIANT RAGWEED POLLEN EXTRACTS.

The writers, in a previous paper (4), have shown that giant and short ragweed extracts behave qualitatively quite similarly toward the sensitized guinea pig. It is possible, however, to distinguish the two by the use of cross fixation tests using several sera, binding being more pronounced with the homologous sera and antigen.

TABLE 2.—Cross fixation using giant and short ragweed extract against short and giant ragweed antisera.

Pollen extract.	Rabbit antisera.					
	Anti-short, rabbit sera No. 2.	Anti-short, rabbit sera No. 5.	Anti-short, rabbit sera No. 10.	Anti-giant, rabbit sera No. 16.	Anti-giant, rabbit sera No. 18.	Anti-giant, rabbit sera No. 21.
Short.....	10	10	40	60	(Partial.) 100	(Partial.) 100
Giant.....	50	40	(¹)	10	10	10

¹ Not in 100.

VALUE OF THE COMPLEMENT-FIXING PROPERTIES OF POLLEN EXTRACTS IN TREATMENT.

We do not wish to imply that the complement-fixing body has any value in the actual treatment of hay fever cases (this phase of the question will be reported upon later); but we feel that it does offer a method for the study of extracts as regards their specificity and keeping qualities.

SUMMARY.

1. Complement fixation offers a method for studying the specificity and keeping qualities of pollen extracts.
2. An extract of mature ragweed pollen in glycerine 2 parts, Coca's fluid 1 part, gives a stabile, potent, specific, bacteria-resisting extract.
3. This extract can be kept for long periods of time without apparent deterioration.
4. No antibodies were demonstrated in the sera of sensitive patients either before or after prophylactic treatment.
5. Short and giant ragweed pollen extracts tested with their respective antisera give cross fixation, but can be distinguished from each other by the relative strength of the reactions.

ACKNOWLEDGMENTS.

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DEATHS DURING WEEK ENDED SEPTEMBER 6, 1924.

Summary of information received by telegraph from industrial insurance companies for week ended September 6, 1924, and corresponding week of 1923. (From the Weekly Health Index September 9, 1924, issued by the Bureau of the Census Department of Commerce.)

	Week ended September 6, 1924.	Corresponding week, 1923.
Policies in force.....	56, 873, 682	53, 319, 916
Number of death claims.....	7, 418	7, 656
Death claims per 1,000 policies in force, annual rate..	6. 8	7. 5

Deaths from all causes in certain large cities of the United States during the week ended September 6, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, September 9, 1924, issued by the Bureau of the Census, Department of Commerce.)

City.	Week ended Sept. 6, 1924.		Annual death rate per 1,000 corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate, week ended Sept. 6, 1924. ²
	Total deaths.	Death rate. ¹		Week ended Sept. 6, 1924.	Corresponding week, 1923.	
Total (65 cities).....	5,669	10.9	³ 10.5	823	⁴ 843	-----
Akron.....	26	-----	-----	4	6	42
Albany.....	25	11.0	15.1	3	4	68
Atlanta.....	60	13.7	17.3	11	5	-----
Baltimore.....	176	11.7	14.2	30	34	89
Birmingham.....	45	11.7	16.5	8	10	-----
Boston.....	164	11.0	9.3	23	19	64
Bridgeport.....	23	-----	-----	4	3	64
Buffalo.....	140	13.4	11.6	22	22	93
Cambridge.....	25	11.6	11.2	3	5	52
Camden.....	29	12.0	12.6	4	9	66
Chicago.....	522	9.3	9.2	86	94	80
Cincinnati.....	87	11.1	14.2	11	16	69
Cleveland.....	163	9.3	9.9	33	33	84
Columbus.....	49	9.6	14.8	5	12	47
Dallas.....	35	9.7	6.9	3	2	-----
Dayton.....	21	6.5	9.8	5	5	84
Denver.....	77	-----	-----	16	11	-----
Des Moines.....	36	12.9	9.6	0	2	0
Detroit.....	233	-----	-----	40	63	74
Duluth.....	14	6.7	4.4	1	1	22
Erie.....	19	-----	-----	2	2	41
Fall River.....	23	9.9	12.9	5	11	70
Flint.....	15	-----	-----	3	5	52
Fort Worth.....	17	6.0	6.9	2	4	-----
Grand Rapids.....	24	8.1	9.3	1	3	16
Houston.....	35	-----	-----	3	3	-----
Indianapolis.....	88	13.1	10.8	16	15	118
Jacksonville, Fla.....	32	16.3	11.5	3	0	-----
Jersey City.....	82	13.7	8.3	14	12	100
Kansas City, Kans.....	28	12.4	10.4	2	2	39
Kansas City, Mo.....	62	9.0	10.8	8	7	-----
Los Angeles.....	175	-----	-----	21	23	66
Louisville.....	65	13.1	17.2	13	10	122
Lowell.....	25	11.3	13.1	5	6	89
Lynn.....	16	8.0	8.1	2	3	51
Memphis.....	90	27.2	11.3	19	5	-----
Milwaukee.....	71	7.5	9.8	6	16	28
Minneapolis.....	67	8.4	10.3	9	7	48
Nashville.....	46	19.4	17.0	7	3	-----
New Bedford.....	19	7.5	11.2	5	5	78
New Haven.....	32	9.5	10.6	4	3	53
New Orleans.....	133	16.9	16.0	16	13	-----
New York.....	1,246	10.8	9.2	157	180	64
Bronx Borough.....	135	8.1	8.3	8	20	28
Brooklyn Borough.....	426	10.1	8.6	69	69	73
Manhattan Borough.....	547	12.6	10.4	66	75	67
Queens Borough.....	95	8.9	7.6	9	11	45
Richmond Borough.....	43	17.2	12.7	5	5	91
Newark, N. J.....	98	11.5	10.1	19	9	89
Norfolk.....	32	10.2	8.5	5	4	89
Oakland.....	35	7.4	8.5	1	4	13
Oklahoma City.....	21	10.5	-----	3	-----	-----
Omaha.....	37	9.3	11.7	7	9	75
Paterson.....	31	11.5	6.4	7	4	119
Philadelphia.....	424	11.3	10.4	74	60	94
Pittsburgh.....	147	12.2	13.4	23	24	78
Portland, Oreg.....	46	8.6	10.3	8	2	83
Providence.....	55	11.8	11.4	13	10	106
Richmond.....	67	19.0	13.8	13	7	158
Rochester.....	70	11.2	-----	11	-----	87
St. Louis.....	159	10.2	9.9	10	15	-----
St. Paul.....	40	8.5	9.9	6	8	51
Salt Lake City.....	28	11.4	10.3	1	4	20

¹ Annual rate per 1,000 population.

² Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1923. Cities left blank are not in the registration area for births.

³ Data for 63 cities.

⁴ Deaths for week ended Friday, September 5, 1924.

Deaths from all causes in certain large cities of the United States during the week ended September 6, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, September 9, 1924, issued by the Bureau of the Census, Department of Commerce.)—Continued.

City.	Week ended Sept. 6, 1924.		Annual death rate per 1,000 corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate, week ended Sept. 6, 1924.
	Total deaths.	Death rate.		Week ended Sept. 6, 1924.	Corresponding week, 1923.	
San Antonio.....	31	8.4	14.1	5	11	-----
San Francisco.....	136	12.9	11.9	8	10	48
Schenectady.....	14	7.3	8.4	2	3	59
Seattle.....	51	-----	-----	2	6	20
Somerville.....	19	9.9	10.0	1	4	27
Spokane.....	23	-----	-----	0	1	0
Springfield, Mass.....	27	9.5	10.1	6	4	101
Syracuse.....	32	8.9	10.7	2	6	25
Tacoma.....	32	10.2	7.7	5	2	120
Toledo.....	62	11.7	8.5	5	10	47
Trenton.....	29	11.7	9.8	5	5	83
Utica.....	16	7.9	12.6	0	5	0
Washington, D. C.....	107	11.5	11.5	18	21	104
Waterbury.....	12	-----	-----	4	4	93
Wilmington, Del.....	37	16.1	7.1	5	2	112
Worcester.....	43	11.5	12.2	8	5	96
Yonkers.....	24	11.4	7.3	6	5	131
Youngstown.....	14	4.7	13.9	4	12	55

PREVALENCE OF DISEASE.

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.

UNITED STATES.

CURRENT WEEKLY STATE REPORTS.

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers.

Reports for Week Ended September 13, 1924.

ARIZONA.		CONNECTICUT—continued.	
	Cases.		Cases.
Diphtheria.....	4	Diphtheria.....	25
Measles.....	1	Dysentery (bacillary).....	1
Mumps.....	2	Lethargic encephalitis.....	1
Scarlet fever.....	5	Malaria.....	1
Tuberculosis.....	161	Measles.....	4
Typhoid fever.....	9	Mumps.....	14
Whooping cough.....	4	Pneumonia (lobar).....	6
		Poliomyelitis.....	8
ARKANSAS.		Scarlet fever.....	24
Chicken pox.....	5	Trachoma.....	1
Diphtheria.....	8	Tuberculosis (all forms).....	42
Hookworm disease.....	3	Typhoid fever.....	8
Influenza.....	8	Whooping cough.....	29
Malaria.....	143		
Measles.....	30	DELAWARE.	
Mumps.....	5	Influenza.....	1
Paratyphoid fever.....	1	Measles.....	1
Pellagra.....	2	Mumps.....	1
Scarlet fever.....	8	Scarlet fever.....	1
Trachoma.....	4	Tuberculosis.....	1
Tuberculosis.....	3	Typhoid fever.....	2
Typhoid fever.....	43		
Whooping cough.....	22	FLORIDA.	
		Cerebrospinal meningitis.....	1
COLORADO.		Diphtheria.....	16
(Exclusive of Denver.)		Influenza.....	3
Anthrax.....	1	Malaria.....	24
Chicken pox.....	1	Pneumonia.....	2
Diphtheria.....	10	Typhoid fever.....	9
Impetigo contagiosa.....	1	Typhus fever.....	2
Measles.....	4		
Paratyphoid fever.....	1	GEORGIA.	
Scarlet fever.....	8	Dengue.....	1
Trachoma.....	1	Diphtheria.....	13
Trichinosis.....	1	Dysentery (bacillary).....	1
Tuberculosis.....	88	German measles.....	1
Typhoid fever.....	7	Hookworm disease.....	6
Whooping cough.....	8	Malaria.....	22
		Measles.....	1
CONNECTICUT.		Mumps.....	7
Cerebrospinal meningitis.....	1	Paratyphoid fever.....	3
Conjunctivitis (infectious).....	1	Pellagra.....	1

GEORGIA—continued.

GEORGIA—continued.		Cases.
Pneumonia.....	.....	2
Scarlet fever.....	.....	4
Septic sore throat.....	.....	1
Smallpox.....	.....	2
Tetanus.....	.....	1
Trachoma.....	.....	1
Trichinosis.....	.....	1
Tuberculosis.....	.....	7
Typhoid fever.....	.....	21
Whooping cough.....	.....	4

ILLINOIS.

Cerebrospinal meningitis—Cook County.....	1
Diphtheria:	
Cook County.....	43
Scattering.....	36
Influenza.....	2
Lethargic encephalitis—Macon County.....	1
Measles.....	19
Pneumonia.....	78
Poliomyelitis:	
Cook County.....	5
Henry County.....	1
Johnson County.....	1
Kane County.....	1
Kendall County.....	1
Ogle County.....	1
Richland County.....	1
Whiteside County.....	1
Scarlet fever:	
Cook County.....	25
Vermilion County.....	8
Scattering.....	29
Smallpox.....	4
Tuberculosis.....	241
Typhoid fever:	
Cook County.....	12
Montgomery County.....	15
Scattering.....	32
Whooping cough.....	139

IOWA.

Diphtheria.....	6
Polioomyelitis—Clinton.....	19
Scarlet fever.....	20
Smallpox.....	5
Typhoid fever.....	1

KANSAS.

Cerebrospinal meningitis.....	1
Chicken pox.....	19
Diphtheria.....	19
Measles.....	4
Mumps.....	18
Pellagra.....	1
Pneumonia.....	6
Poliomyelitis.....	1
Scarlet fever.....	35
Septic sore throat.....	1
Tuberculosis.....	20
Typhoid fever.....	18
Vincent's angina.....	1
Whooping cough.....	14

LOUISIANA.

Cerebrospinal meningitis.....	1
Diphtheria.....	13

LOUISIANA—continued.

	Cases.
Hookworm disease	4
Leprosy	1
Malaria	15
Pneumonia	21
Scarlet fever	2
Smallpox	4
Tuberculosis	33
Typhoid fever	6

MAINE.

Chicken pox.....	5
Diphtheria.....	5
German measles.....	1
Influenza.....	4
Mumps.....	2
Poliomyelitis.....	2
Scarlet fever.....	11
Tuberculosis.....	12
Typhoid fever.....	6
Whooping cough.....	4

MARYLAND.¹

Chicken pox.....	1
Diphtheria.....	22
Dysentery.....	6
German measles.....	1
Influenza.....	13
Lethargic encephalitis.....	2
Malaria.....	1
Measles.....	5
Mumps.....	7
Pneumonia (all forms).....	15
Poliomyelitis.....	18
Scarlet fever.....	7
Septic sore throat.....	2
Tetanus.....	2
Tuberculosis.....	50
Typhoid fever.....	53
Whooping cough.....	41

MASSACHUSETTS.

Cerebrospinal meningitis	9
Chicken pox	22
Conjunctivitis (suppurative)	12
Diphtheria	47
Lethargic encephalitis	2
Measles	23
Mumps	19
Ophthalmia neonatorum	25
Pneumonia (lobar)	26
Poliomyelitis	34
Scarlet fever	76
Septic sore throat	2
Tetanus	1
Tuberculosis (all forms)	142
Typhoid fever	12
Whooping cough	53

MICHIGAN.

Diphtheria.....	74
Measles.....	16
Pneumonia.....	24
Scarlet fever.....	69
Smallpox.....	11
Tuberculosis.....	27
Typhoid fever.....	17
Whooping cough.....	98

¹ Week ended Friday.

MONTANA.		NORTH CAROLINA--continued.	
	Cases.		Cases.
Diphtheria.....	6	Smallpox.....	13
Poliomyelitis:		Typhoid fever.....	50
Billings, R. F. D.....	1	Whooping cough.....	95
Butte.....	2		
Bozeman, R. F. D.....	3	OREGON.	
Manhattan.....	1	Chicken pox.....	6
Missoula, R. F. D.....	1	Diphtheria:	
Missoula.....	9	Portland.....	12
Scarlet fever.....	14	Scattering.....	6
Typhoid fever.....	2	Measles.....	2
		Mumps.....	4
NEW JERSEY.		Pneumonia.....	14
Cerebrospinal meningitis.....	4	Scarlet fever.....	13
Chicken pox.....	13	Smallpox.....	5
Diphtheria.....	49	Tuberculosis.....	5
Influenza.....	5	Typhoid fever.....	5
Malaria.....	2	Whooping cough.....	7
Measles.....	14		
Pneumonia.....	37	SOUTH DAKOTA.	
Poliomyelitis.....	4	Diphtheria.....	4
Scarlet fever.....	25	Influenza.....	1
Smallpox.....	3	Mumps.....	1
Trachoma.....	1	Poliomyelitis.....	1
Typhoid fever.....	15	Scarlet fever.....	15
Whooping cough.....	149	Smallpox.....	2
		Tuberculosis.....	4
NEW MEXICO.		Typhoid fever.....	6
Anthrax.....	4	Whooping cough.....	11
Diphtheria.....	13		
Dysentery.....	1	TEXAS.	
Measles.....	5	Cerebrospinal meningitis.....	4
Mumps.....	3	Chicken pox.....	13
Paratyphoid fever.....	1	Dengue.....	23
Scarlet fever.....	5	Diphtheria.....	45
Tuberculosis.....	15	Dysentery (epidemic).....	52
Typhoid fever.....	21	Influenza.....	98
Vincent's angina.....	2	Lethargic encephalitis.....	4
Whooping cough.....	200	Malta fever.....	2
		Measles.....	17
NEW YORK.		Mumps.....	26
Diphtheria.....	49	Ophthalmia neonatorum.....	2
Influenza.....	3	Paratyphoid fever.....	19
Lethargic encephalitis.....	2	Pellagra.....	44
Measles.....	37	Pneumonia.....	15
Pneumonia.....	48	Poliomyelitis.....	2
Poliomyelitis.....	51	Rabies in man.....	3
Scarlet fever.....	60	Scarlet fever.....	21
Smallpox.....	3	Smallpox.....	4
Typhoid fever.....	39	Tetanus.....	5
Whooping cough.....	177	Trachoma.....	8
		Tuberculosis.....	39
NORTH CAROLINA.		Typhoid fever.....	63
Cerebrospinal meningitis.....	1	Typhus fever.....	1
Chicken pox.....	5	Whooping cough.....	45
Diphtheria.....	184		
German measles.....	1	VERMONT.	
Measles.....	31	Chicken pox.....	1
Poliomyelitis.....	1	Diphtheria.....	2
Scarlet fever.....	36	Measles.....	10
Septic sore throat.....	3	Scarlet fever.....	2
		Smallpox.....	1
		Whooping cough.....	24

¹ Deaths.

WASHINGTON.		Cases.	WISCONSIN.		Cases.
Chicken pox.....		13	Milwaukee:		
Diphtheria.....		35	Chicken pox.....		3
Measles.....		2	Diphtheria.....		6
Mumps.....		2	Measles.....		1
Poliomyelitis:			Mumps.....		3
Bellingham.....		2	Pneumonia.....		1
Chelan County.....		8	Poliomyelitis.....		1
Kittitas County.....		3	Scarlet fever.....		12
Okanogan County.....		1	Smallpox.....		1
Seattle.....		4	Tuberculosis.....		21
Skagit County.....		1	Typhoid fever.....		1
Spokane.....		1	Whooping cough.....		29
Tacoma.....		2	Scattering:		
Thurston County.....		1	Chicken pox.....		19
Walla Walla County.....		1	Diphtheria.....		29
Scarlet fever.....		28	German measles.....		1
Smallpox.....		13	Influenza.....		9
Tuberculosis.....		46	Measles.....		11
Typhoid fever.....		17	Mumps.....		9
Whooping cough.....		7	Pneumonia.....		7
WEST VIRGINIA.			Poliomyelitis.....		1
Cerebrospinal meningitis.....		1	Scarlet fever.....		40
Diphtheria.....		5	Smallpox.....		14
Scarlet fever.....		4	Tuberculosis.....		22
Smallpox.....		1	Typhoid fever.....		5
Typhoid fever.....		13	Whooping cough.....		100

Reports for Week Ended September 6, 1924.

CALIFORNIA.		Cases.	DISTRICT OF COLUMBIA—continued		Cases.
Cerebrospinal meningitis—Siskiyou County..		1	Typhoid fever.....		2
Diphtheria.....		116	Whooping cough.....		7
Influenza.....		3	NEBRASKA.		
Lethargic encephalitis—San Francisco.....		1	Chicken pox.....		3
Measles.....		16	Diphtheria.....		14
Poliomyelitis:			Scarlet fever.....		2
Los Angeles.....		1	Tetanus.....		1
Fresno County.....		1	Tuberculosis.....		1
Scarlet fever.....		44	Typhoid fever.....		1
Smallpox:			NORTH DAKOTA.		
Los Angeles.....		15	Chicken pox.....		2
Los Angeles County.....		18	Diphtheria.....		3
Scattering.....		22	Pneumonia.....		1
Typhoid fever.....		17	Poliomyelitis.....		8
DISTRICT OF COLUMBIA			Scarlet fever.....		12
Chicken pox.....		5	Tuberculosis.....		1
Diphtheria.....		5	Typhoid fever.....		1
Scarlet fever.....		8	Whooping cough.....		10
Tuberculosis.....		17			

SUMMARY OF MONTHLY REPORTS FROM STATES.

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State.	Cerebro-spinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pellagra.	Polio-myelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
July, 1924.										
Colorado.....		86			49			36	10	20
August, 1924.										
Arizona.....		9			6		1	8	2	7
Connecticut.....	8	91	3	9	38		36	81	1	44
Delaware.....		3	9	1	2			4		7
Georgia.....	2	60	4	204	26	9		29	21	164
Massachusetts.....	8	376	2	9	149	1	37	227		65
Vermont.....		6			25		2	16		
Wyoming.....		5	1		2			11		6

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES.

Diphtheria.—For the week ended August 30, 1924, 35 States reported 1,063 cases of diphtheria. For the week ended September 1, 1923, the same States reported 1,284 cases of this disease. One hundred and one cities, situated in all parts of the country and having an aggregate population of about 28,000,000, reported 477 cases of diphtheria for the week ended August 30, 1924. Last year, for the corresponding week, they reported 634 cases. The estimated expectancy for these cities was 637 cases of diphtheria. The estimated expectancy was based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty States reported 269 cases of measles for the week ended August 30, 1924, and 1,037 cases of this disease for the week ended September 1, 1923. One hundred and one cities reported 120 cases of measles for the week this year and 333 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-five States—this year 659 cases; last year 806 cases. One hundred and one cities—this year 307, last year 309 cases; estimated expectancy, 282 cases.

Smallpox.—For the week ended August 30, 1924, 35 States reported 205 cases of smallpox. Last year, for the corresponding week, they reported 145 cases. One hundred and one cities reported smallpox for the week as follows: 1924, 88 cases; 1923, 40 cases; estimated expectancy, 30 cases. These cities reported 4 deaths from smallpox for the week.

Typhoid fever.—Eight hundred and forty-eight cases of typhoid fever were reported for the week ended August 30, 1924, by 34 States. For the corresponding week of 1923 the same States reported 904

cases. One hundred and one cities reported 214 cases of typhoid fever for the week this year and 264 cases for the week last year. The estimated expectancy for these cities was 247 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 101 cities as follows: 1924, 326 deaths; 1923, 302 deaths.

City reports for week ended August 30, 1924.

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city.	Chick- en pox, cases re- ported.	Diphtheria.		Influenza.		Meas- les, cases re- ported.	Mumps, cases re- ported.	Pneu- monia, deaths re- ported.	Scarlet fever.	
		Cases, esti- mated expect- ancy.	Cases re- ported.	Cases re- ported.	Deaths re- ported.				Cases, esti- mated expect- ancy.	Cases re- ported.
NEW ENGLAND.										
Maine:										
Lewiston.....	0	1	0	0	0	0	0	0	1	0
Portland.....	0	1	0	0	0	0	0	1	1	0
New Hampshire:										
Concord.....	0	1	0	0	0	0	0	0	0	0
Vermont:										
Barre.....	0	0	0	0	0	0	0	0	1	0
Burlington.....	0	0	0	0	0	0	0	0	1	0
Massachusetts:										
Boston.....	0	33	26	0	0	16	2	13	12	17
Fall River.....	0	2	1	0	0	1	0	0	1	2
Springfield.....	0	2	0	0	0	3	3	0	1	1
Worcester.....	2	3	0	0	0	1	2	0	2	0
Rhode Island:										
Pawtucket.....	0	1	0	0	0	0	0	0	0	0
Providence.....	0	6	3	0	0	0	0	3	2	4
Connecticut:										
Bridgeport.....	0	4	2	1	1	0	0	0	1	3
Hartford.....	0	4	1	0	0	2	1	0	1	0
New Haven.....	0	3	2	0	0	3	1	2	2	1
MIDDLE ATLANTIC.										
New York:										
Buffalo.....	0	13	2	0	0	8	0	9	6	1
New York.....	13	92	102	1	2	17	5	84	24	32
Rochester.....		5	0	0	0	2		3	2	5
Syracuse.....	0	5	2	0	0	1	1	0	4	1
New Jersey:										
Camden.....	1	0	2	0	0	0	0	1	0	0
Newark.....	0	8	11	0	0	8	0	0	3	6
Trenton.....	1	4	4	0	0	0	0	2	1	0
Pennsylvania:										
Philadelphia.....	3	32	33		2	4	11	16	16	10
Pittsburgh.....	1	20	10		0	1	7	21	7	14
Reading.....	0	2	1	0	0	0	1	0	0	0
Scranton.....	1	2	2	0	0	1	0	3	0	0
EAST NORTH CENTRAL.										
Ohio:										
Cincinnati.....	2	9	0		1	0	0	2	4	5
Cleveland.....		23							10	
Columbus.....	0	3	1		1	1	1	1	3	4
Toledo.....	0	6	8	0	0	5	6	0	5	1

City reports for week ended August 30, 1924—Continued.

Division, State, and city.	Chick- en pox, cases re- ported.	Diphtheria.		Influenza.		Meas- les, cases re- ported.	Mumps, cases re- ported.	Pneu- monia, deaths re- ported.	Scarlet fever.		
		Cases, esti- mated expect- ancy.	Cases re- ported.	Cases re- ported.	Deaths re- ported.				Cases, esti- mated expect- ancy.	Cases re- ported.	
EAST NORTH CENTRAL—contd.											
Indiana:											
Fort Wayne.....	-----	2	1	0	0	0	-----	1	0	2	
Indianapolis.....	-----	10	3	0	0	0	-----	4	3	0	
South Bend.....	0	2	4	0	0	0	0	0	2	0	
Terre Haute.....	0	1	1	0	0	0	0	0	0	2	
Illinois:											
Chicago.....	8	71	27	-----	1	10	6	23	36	16	
Cicero.....	0	3	1	0	0	0	0	0	0	1	
Peoria.....	0	1	0	0	0	0	0	1	2	0	
Springfield.....	-----	1	0	0	0	1	-----	2	1	0	
Michigan:											
Detroit.....	7	39	8	2	0	2	6	14	23	20	
Flint.....	1	6	0	0	0	1	1	0	2	7	
Grand Rapids.....	0	3	2	0	0	0	0	2	2	7	
Wisconsin:											
Madison.....	1	0	2	2	-----	0	1	-----	1	0	
Milwaukee.....	8	12	7	0	0	2	2	-----	11	4	
Racine.....	0	1	0	0	0	0	0	1	1	0	
Superior.....	0	0	0	0	0	0	0	0	1	1	
WEST NORTH CENTRAL.											
Minnesota:											
Duluth.....	1	2	0	0	0	0	0	1	3	5	
Minneapolis.....	10	14	8	0	0	0	2	2	7	14	
St. Paul.....	-----	13	10	0	0	0	-----	4	3	5	
Iowa:											
Sioux City.....	1	1	0	0	-----	0	0	-----	1	0	
Waterloo.....	0	1	0	0	-----	0	0	-----	1	0	
Missouri:											
Kansas City.....	0	5	2	0	0	0	0	5	2	0	
St. Joseph.....	0	1	0	0	0	0	0	0	1	0	
St. Louis.....	3	26	23	0	0	8	4	-----	7	32	
North Dakota:											
Fargo.....	0	0	0	0	0	0	0	0	1	0	
Grand Forks.....	0	1	0	0	-----	0	0	-----	1	0	
South Dakota:											
Sioux Falls.....	0	0	1	0	0	0	0	0	0	0	
Nebraska:											
Lincoln.....	0	0	0	0	0	0	0	0	0	0	
Omaha.....	1	8	5	0	0	1	0	5	2	1	
Kansas:											
Topeka.....	1	1	1	0	0	0	4	0	1	1	
Wichita.....	0	2	0	0	0	0	0	1	1	0	
SOUTH ATLANTIC.											
Delaware:											
Wilmington.....	0	1	3	0	0	0	0	1	1	0	
Maryland:											
Baltimore.....	1	11	16	1	1	6	0	10	7	5	
Cumberland.....	-----	1	0	0	0	0	-----	1	0	1	
Frederick.....	-----	0	2	0	0	0	-----	0	0	0	
District of Columbia:											
Washington.....	2	4	2	0	0	0	0	9	3	7	
Virginia:											
Lynchburg.....	0	1	1	0	0	0	0	1	0	0	
Norfolk.....	0	2	1	0	0	0	1	0	0	1	
Richmond.....	0	6	15	0	0	4	0	2	3	4	
Roanoke.....	0	2	4	0	0	0	0	0	1	1	
West Virginia:											
Charleston.....	0	1	0	0	0	0	0	1	1	1	
Huntington.....	0	1	0	0	-----	0	0	-----	1	1	
Wheeling.....	0	2	1	0	0	0	0	1	2	1	
North Carolina:											
Raleigh.....	-----	1	-----	-----	-----	-----	-----	-----	1	-----	
Wilmington.....	-----	1	2	0	0	0	-----	1	0	0	
Winston-Salem.....	1	1	17	0	0	1	1	1	1	4	
South Carolina:											
Charleston.....	0	1	0	0	0	0	0	1	1	1	
Columbia.....	0	1	1	0	0	0	0	0	0	0	
Greenville.....	0	1	2	0	0	0	0	1	1	0	

City reports for week ended August 30, 1924—Continued.

Division, State, and city.	Chick- en pox, cases re- ported	Diphtheria.		Influenza.		Mea- sles, cases re- ported.	Mumps, cases re- ported.	Pneu- monia, deaths re- ported.	Scarlet fever.	
		Cases, esti- mated expect- ancy.	Cases re- ported.	Cases re- ported.	Deaths re- ported.				Cases, esti- mated expect- ancy.	Cases re- ported
SOUTH ATLANTIC— continued.										
Georgia:										
Atlanta.....	0	5	0	0	0	0	0	4	4	0
Brunswick.....	0	0	0	0	0	0	0	0	0	0
Savannah.....	0	1	0	0	0	0	1	0	1	0
Florida:										
St. Petersburg.....	0		0	0	1	0	0	0	0	0
Tampa.....	2	1	0	0	0	0		0	0	0
EAST SOUTH CEN- TRAL.										
Kentucky:										
Covington.....	0	1	0	0	0	0	0	0	0	1
Lexington.....	1	1							0	
Louisville.....	0	6	1	0	0	1	0	1	1	1
Tennessee:										
Memphis.....	0	6	3	0	0	0	0	3	2	2
Nashville.....	0	1	2	0	1	0	0	2	2	0
Alabama:										
Birmingham.....	0	4	2	0	0	0	3	4	3	5
Mobile.....	0	1	0	0	0	0	0	1	0	0
Montgomery.....	1								1	
WEST SOUTH CEN- TRAL.										
Arkansas:										
Fort Smith.....	0	1	0	0		0	0		1	0
Little Rock.....	0	1	2	0		0	0		1	0
Louisiana:										
New Orleans.....	0	8	7	2	1	0	0	4	1	2
Shreveport.....	0		0	0	0	0	0	0		0
Oklahoma:										
Oklahoma.....	0	1	0	0	0	0	1	0	1	0
Tulsa.....	0	1	0	0		0	0		1	0
Texas:										
Dallas.....	0	4	0	0	0	0	0	3	1	0
Galveston.....	0	0	1	0	0	0	0	1	0	0
Houston.....	2	1	0	1	0	0		1	1	3
San Antonio.....	0	1	0	0	0	0	0	2	1	0
MOUNTAIN.										
Montana:										
Billings.....	0	0	0	0	0	0	0	0	0	0
Great Falls.....	0	1	0	0	0	0	0	1	0	0
Helena.....	0	0	0	0	0	0	0	1	0	0
Missoula.....	0	0	0	0	0	0	0	0	0	0
Idaho:										
Boise.....	0	0	0	0	0	0	0	0	0	0
Colorado:										
Denver.....	3	8	15	0	0	3	1	9	3	10
Pueblo.....	0	4	0	0	0	0	0	0	0	5
New Mexico:										
Albuquerque.....	1	1	0	0	0	0		0	1	0
Utah:										
Salt Lake City.....	2	2	1	0	0	1	4	2	2	2
Nevada:										
Reno.....	0	0	0	0	0	0	0	0	0	0
PACIFIC.										
Washington:										
Seattle.....	5	3	6	0		0	1		3	7
Spokane.....	1	1	0	0		0	0		3	0
Tacoma.....	1	1	2	0		0	2		1	2
Oregon:										
Portland.....	0	3	14	0	0	3	0	2	2	5
California:										
Los Angeles.....	4	18	28	2	0	3	1	11	5	6
Sacramento.....	0	1	5	0	0	0	0	1	1	0
San Francisco.....	2	15	15	0	0	1	3	5	6	5

City reports for week ended August 30, 1924—Continued.

Division, State, and city.	Popula- tion July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths re- ported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
NEW ENGLAND.										
Maine:										
Lewiston.....	33,790	0	0	0	0	0	1	0	0	6
Portland.....	73,129	0	0	0	0	2	0	0	0	16
New Hampshire:										
Concord.....	22,408	0	0	0	0	0	0	0	0	5
Vermont:										
Barre.....	10,008	0	0	0	0	0	0	0	0	4
Burlington.....	23,613	0	0	0	0	1	0	0	0	11
Massachusetts:										
Boston.....	770,400	0	0	0	19	6	2	0	12	200
Fall River.....	120,912	0	0	0	1	2	0	0	4	24
Springfield.....	144,227	0	0	0	1	1	0	0	2	25
Worcester.....	191,927	0	0	0	3	1	0	0	0	52
Rhode Island:										
Pawtucket.....	68,799	0	0	0	1	1	0	0	0	9
Providence.....	242,378	0	0	0	3	1	2	0	1	48
Connecticut:										
Bridgeport.....	143,555	0	0	0	1	0	0	0	—	11
Hartford.....	138,036	0	0	0	3	2	0	0	2	15
New Haven.....	172,967	0	0	0	1	4	8	0	16	25
MIDDLE ATLANTIC.										
New York:										
Buffalo.....	536,718	0	0	0	12	3	1	0	18	128
New York.....	5,927,625	0	0	0	88	47	31	4	154	1,106
Rochester.....	317,867	0	1	0	1	1	0	0	—	61
Syracuse.....	184,511	0	0	0	1	1	0	0	2	38
New Jersey:										
Camden.....	124,157	0	5	1	0	3	0	0	0	19
Newark.....	438,699	0	0	0	6	3	0	1	117	92
Trenton.....	127,390	0	0	0	3	2	0	0	2	40
Pennsylvania:										
Philadelphia.....	1,922,788	0	0	0	30	17	7	2	96	406
Pittsburgh.....	613,442	0	5	0	8	4	2	1	11	147
Reading.....	110,917	0	0	0	1	1	0	0	24	30
Scranton.....	140,636	0	0	0	2	0	3	1	25	—
EAST NORTH CENTRAL.										
Ohio:										
Cincinnati.....	406,312	1	0	0	10	3	2	1	4	114
Cleveland.....	888,519	1	—	—	—	4	—	—	—	—
Columbus.....	261,082	0	0	0	8	2	4	0	7	78
Toledo.....	268,338	0	2	1	0	2	4	0	15	41
Indiana:										
Fort Wayne.....	93,573	0	0	0	3	1	4	0	—	24
Indianapolis.....	342,718	1	0	0	9	3	1	1	—	106
South Bend.....	76,709	0	0	0	1	0	0	0	—	5
Terre Haute.....	68,939	0	0	0	1	0	0	0	0	14
Illinois:										
Chicago.....	2,886,121	1	3	0	30	7	6	1	132	529
Cicero.....	55,968	0	0	0	0	0	0	0	0	4
Peoria.....	79,675	0	0	0	1	1	0	0	0	20
Springfield.....	61,833	0	0	0	0	1	0	0	—	16
Michigan:										
Detroit.....	995,668	1	2	1	22	5	0	0	72	244
Flint.....	117,968	0	2	0	1	2	0	0	0	15
Grand Rapids.....	145,947	1	0	0	0	1	0	0	4	26
Wisconsin:										
Madison.....	42,519	0	3	—	—	0	0	—	24	3
Milwaukee.....	484,595	1	0	0	7	1	0	0	27	70
Racine.....	64,393	0	0	0	0	0	0	0	0	5
Superior.....	30,671	1	1	0	0	0	0	0	0	14

¹ Population Jan. 1, 1920.¹ Pulmonary only.

City reports for week ended August 30, 1924—Continued.

Division, State, and city.	Population July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths re- ported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
WEST NORTH CENTRAL.										
Minnesota:										
Duluth.....	106,289	0	0	0	0	0	3	0	6	25
Minneapolis.....	409,125	2	6	0	8	2	0	0	2	70
St. Paul.....	241,891	1	17	0	6	1	2	0	—	64
Iowa:										
Sioux City.....	79,662	0	0	—	—	0	1	—	1	—
Waterloo.....	39,667	0	0	—	—	0	0	—	4	—
Missouri:										
Kansas City.....	351,819	1	0	0	5	3	3	1	3	82
St. Joseph.....	78,232	0	0	0	0	0	0	0	2	24
St. Louis.....	803,853	1	0	0	11	7	17	1	3	189
North Dakota:										
Fargo.....	24,841	0	0	0	1	0	0	0	0	5
Grand Forks.....	14,547	0	0	—	—	0	0	—	0	—
South Dakota:										
Sioux Falls.....	29,206	0	0	0	0	0	0	0	0	9
Nebraska:										
Lincoln.....	58,761	0	2	1	1	0	0	0	0	11
Omaha.....	204,382	1	2	0	4	1	0	0	1	53
Kansas:										
Topeka.....	52,555	0	0	0	1	1	0	0	4	13
Wichita.....	79,261	1	0	0	0	2	2	0	7	18
SOUTH ATLANTIC.										
Delaware:										
Wilmington.....	117,728	0	0	0	0	1	3	2	2	20
Maryland:										
Baltimore.....	773,580	0	0	0	16	12	4	0	28	174
Cumberland.....	32,361	0	0	0	0	1	2	0	—	16
Frederick.....	11,301	0	0	0	0	1	1	0	—	0
District of Columbia:										
Washington.....	1 437,571	0	0	0	9	5	4	0	11	107
Virginia:										
Lynchburg.....	30,277	0	0	0	0	1	1	0	0	9
Norfolk.....	159,089	0	0	0	2	2	3	0	3	—
Richmond.....	181,044	0	0	0	3	2	0	0	—	43
Roanoke.....	55,502	0	0	0	0	3	5	0	1	18
West Virginia:										
Charleston.....	45,597	0	1	0	0	2	4	0	0	20
Huntington.....	57,918	0	0	—	—	1	0	—	0	—
Wheeling.....	1 56,208	0	0	0	2	1	1	0	0	15
North Carolina:										
Raleigh.....	29,171	0	—	—	—	1	—	—	—	13
Wilmington.....	35,719	0	0	0	0	1	0	0	—	12
Winston-Salem.....	56,230	0	0	0	3	2	0	0	9	—
South Carolina:										
Charleston.....	71,245	0	0	0	2	2	2	0	0	14
Columbia.....	39,688	0	1	0	0	1	2	0	1	13
Greenville.....	25,789	0	0	0	1	0	0	0	3	8
Georgia:										
Atlanta.....	222,963	1	0	0	7	5	1	1	—	75
Brunswick.....	15,937	0	0	0	1	1	0	0	0	5
Savannah.....	89,448	0	0	0	4	2	1	0	0	32
Florida:										
St. Petersburg.....	24,403	0	0	0	0	0	0	0	0	6
Tampa.....	56,050	0	0	0	0	1	0	0	—	6
EAST SOUTH CENTRAL.										
Kentucky:										
Covington.....	57,877	0	0	0	0	1	1	0	0	13
Lexington.....	43,673	0	—	—	—	1	—	—	—	—
Louisville.....	257,671	0	4	0	6	6	4	0	—	61
Tennessee:										
Memphis.....	170,067	0	0	0	7	2	18	5	0	64
Nashville.....	121,128	0	1	0	1	6	7	0	1	48
Alabama:										
Birmingham.....	195,901	0	8	0	4	6	15	0	2	49
Mobile.....	63,858	0	0	0	1	1	3	0	0	23
Montgomery.....	45,383	0	—	—	—	1	—	—	—	—

1 Population Jan. 1, 1920.

City reports for week ended August 30, 1924—Continued.

Division, State, and city.	Popula- tion, July 1, 1923, estimated.	Smallpox.			Tubercu- losis, deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
WEST SOUTH CENTRAL.										
Arkansas:										
Fort Smith.....	30,635	0	0			1	0		2	
Little Rock.....	70,916	0	0	0	4	2	6	0	0	
Louisiana:										
New Orleans.....	404,575	1	0	0	10	4	5	2	3	130
Shreveport.....	54,500		0	0	1		5	0	0	17
Oklahoma:										
Oklahoma.....	101,150	0	0	0	1	1	4	0	0	17
Tulsa.....	102,018	0	0			3	0		0	
Texas:										
Dallas.....	177,274	0	1	0	7	3	9	3	2	39
Galveston.....	46,877	0	0	0	2	0	0	1	0	23
Houston.....	154,970	0	0	0	1	1	0	0		37
San Antonio.....	184,727	0	0	0	6	0	0	0	0	
MOUNTAIN.										
Montana:										
Billings.....	16,927	1	1	0	0	0	1	0	0	10
Great Falls.....	27,787	1	0	0	0	1	0	0	0	8
Helena.....	¹ 12,037	0	0	0	0	0	0	0	0	2
Missoula.....	¹ 12,668	1	0	0	0	0	1	0	0	8
Idaho:										
Boise.....	22,806	1	1	0	0	0	0	0	0	11
Colorado:										
Denver.....	272,031	2	0	0	13	4	0	0	14	80
Pueblo.....	43,519	0	0	0	2	1	0	0	0	13
New Mexico:										
Albuquerque.....	16,648	0	0	0	6	1	1	0		13
Utah:										
Salt Lake City.....	126,241	2	0	0	0	1	5	2	3	33
Nevada:										
Reno.....	12,429	0	0	0	0	1	0	0	0	1
PACIFIC.										
Washington:										
Seattle.....	¹ 315,685	1	1			2			5	
Spokane.....	104,573	1	0			1	0		7	
Tacoma.....	101,731	0	2			1	0		0	
Oregon:										
Portland.....	273,621	3	6	0	1	1	0	0	0	
California:										
Los Angeles.....	666,853	1	15	0	16	4	1	0	27	169
Sacramento.....	69,950	1	4	0	2	1	0	0	0	25
San Francisco.....	539,038	1	0	0	8	2	0	0	0	124

¹ Population Jan. 1, 1920.

City reports for week ended August 30, 1924—Continued.

Division, State, and city.	Cerebrospinal meningitis.		Lethargic encephalitis.		Pellagra.		Poliomyelitis (infantile paralysis).		
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases, est. expectancy.	Cases.	Deaths.
NEW ENGLAND.									
Maine:									
Lewiston.....	0	0	0	0	0	0	0	1	0
Massachusetts:									
Boston.....	2	1	1	0	0	0	1	5	0
Fall River.....	0	0	0	0	0	0	0	1	0
Rhode Island:									
Providence.....	0	0	0	0	0	0	0	1	0
Connecticut:									
Bridgeport.....	0	0	1	0	0	0	0	0	0
Hartford.....	0	0	1	0	0	0	0	3	0
MIDDLE ATLANTIC.									
New York:									
Buffalo.....	8	0	0	0	0	0	0	0	0
New York.....	6	3	8	1	0	1	8	15	1
Syracuse.....	0	0	0	0	0	0	0	10	1
New Jersey:									
Newark.....	0	0	1	0	0	0	1	0	0
Pennsylvania:									
Philadelphia.....	0	0	2	0	0	0	1	1	0
EAST NORTH CENTRAL.									
Ohio:									
Cincinnati.....	0	0	0	2	0	0	0	0	0
Columbus.....	0	0	0	1	0	0	0	2	0
Indiana:									
Fort Wayne.....	0	0	0	0	0	0	0	2	1
Illinois:									
Chicago.....	0	0	0	0	0	0	5	3	0
Michigan:									
Detroit.....	0	0	0	0	0	0	1	38	4
Grand Rapids.....	0	0	0	0	0	0	0	4	0
WEST NORTH CENTRAL.									
Minnesota:									
St. Paul.....	0	1	0	0	0	0	1	0	0
Missouri:									
St. Louis.....	0	0	0	0	0	0	1	2	0
North Dakota:									
Fargo.....	0	0	0	1	0	0	0	0	0
Grand Forks.....	0	0	0	0	0	0	0	1	0
SOUTH ATLANTIC.									
Maryland:									
Baltimore.....	2	0	1	1	0	0	2	8	0
Virginia:									
Norfolk.....	1	0	0	0	0	0	0	0	0
North Carolina:									
Winston-Salem.....	0	0	0	0	1	0	0	1	0
Georgia:									
Atlanta.....	0	0	0	0	0	2	0	0	0
EAST SOUTH CENTRAL.									
Alabama:									
Birmingham.....	0	0	0	0	1	1	0	0	0
WEST SOUTH CENTRAL.									
Louisiana:									
Shreveport.....	0	0	0	0	0	1	0	0	0
Oklahoma:									
Oklahoma.....	0	0	0	1	0	0	0	0	0
MOUNTAIN.									
Montana:									
Billings.....	0	0	0	0	0	0	0	0	1
Missoula.....	0	0	0	0	0	0	0	14	1
Colorado:									
Denver.....	0	0	0	0	0	0	0	1	0
PACIFIC.									
Washington:									
Seattle.....	0	0	0	0	0	0	0	10	0
California:									
Los Angeles.....	0	0	0	0	0	0	0	2	0
San Francisco.....	0	0	1	0	0	0	1	0	0

The following table gives a summary of the reports from 105 cities for the 10-week period ended August 30, 1924. The cities included in this table are those whose reports have been published for all 10 weeks in the Public Health Reports. Eight of these cities did not report deaths. The aggregate population of the cities reporting cases was estimated at nearly 29,000,000 on July 1, 1923, which is the latest date for which estimates are available. The cities reporting deaths had more than 28,000,000 population on that date. The number of cities included in each group and the aggregate population are shown in a separate table below.

Summary of weekly reports from cities, June 22 to August 30, 1924.

DIPHTHERIA CASES.

	1924, week ended—									
	June 28.	July 5.	July 12.	July 19.	July 26.	Aug. 2.	Aug. 9.	Aug. 16.	Aug. 23.	Aug. 30.
Total.....	891	666	693	652	560	477	538	456	494	480
New England.....	78	64	55	71	59	47	60	47	48	35
Middle Atlantic.....	387	296	301	274	222	188	197	149	189	167
East North Central.....	136	101	135	120	99	83	103	91	88	1 69
West North Central.....	36	50	52	36	37	40	43	38	49	50
South Atlantic.....	20	17	19	26	21	28	22	40	39	2 68
East South Central.....	8	1	3	2	6	3	6	7	9	3 8
West South Central.....	15	19	5	5	15	12	7	13	15	11
Mountain.....	30	19	36	25	14	5	10	22	14	16
Pacific.....	181	99	87	93	87	71	90	49	43	56

MEASLES CASES.

Total.....	1,857	1,186	987	676	528	406	253	178	136	121
New England.....	120	90	66	52	59	41	11	23	23	26
Middle Atlantic.....	774	535	422	283	204	160	97	65	46	41
East North Central.....	565	288	295	202	155	126	75	51	37	1 25
West North Central.....	63	46	29	35	22	16	11	7	4	9
South Atlantic.....	187	141	91	55	43	34	36	16	10	2 11
East South Central.....	19	15	15	13	6	3	2	4	5	3 1
West South Central.....	5	1	7	3	5	3	0	1	1	0
Mountain.....	35	22	11	7	6	7	3	1	1	4
Pacific.....	89	48	51	26	28	16	18	10	9	4

SCARLET FEVER CASES.

Total.....	713	563	561	441	340	369	360	248	291	307
New England.....	92	59	50	39	38	40	36	24	28	29
Middle Atlantic.....	226	186	144	114	90	73	85	49	55	69
East North Central.....	161	132	168	102	90	126	108	57	74	1 74
West North Central.....	102	68	100	93	65	65	61	61	75	58
South Atlantic.....	43	30	47	33	15	20	21	12	21	2 26
East South Central.....	1	1	7	7	7	2	3	10	13	3 9
West South Central.....	7	11	8	5	9	11	5	9	5	5
Mountain.....	12	16	4	14	5	7	12	5	4	17
Pacific.....	69	60	33	34	21	25	29	21	16	20

SMALLPOX CASES.

Total.....	239	159	169	158	108	116	106	93	71	88
New England.....	0	0	1	0	0	0	0	0	0	0
Middle Atlantic.....	16	19	16	17	9	9	7	8	3	11
East North Central.....	61	44	33	44	35	28	23	16	20	1 12
West North Central.....	41	23	47	33	13	18	15	28	5	25
South Atlantic.....	12	9	3	5	3	3	4	6	4	2 2
East South Central.....	36	23	21	18	13	16	8	13	14	3 13
West South Central.....	7	1	1	0	0	2	0	0	1	2
Mountain.....	9	5	6	4	2	2	1	1	2	1
Pacific.....	57	35	41	37	32	38	48	21	22	22

¹ Figures for Cleveland, Ohio, estimated. Reports not received at time of going to press.

² Figures for Raleigh, N. C., estimated.

³ Figures for Montgomery, Ala., estimated.

Summary of weekly reports from cities, June 22, to August 30, 1924—Continued.

TYPHOID FEVER CASES.

	1924, week ended—									
	June 28.	July 5.	July 12.	July 19.	July 26.	Aug. 2.	Aug. 9.	Aug. 16.	Aug. 23.	Aug. 30.
Total.....	91	128	142	197	191	191	250	232	238	222
New England.....	4	2	6	7	6	4	6	15	8	12
Middle Atlantic.....	41	46	34	50	59	59	63	63	65	41
East North Central.....	11	9	20	20	17	20	30	29	22	¹ 22
West North Central.....	5	15	12	10	11	9	22	22	17	28
South Atlantic.....	10	23	25	36	25	31	44	37	35	³ 34
East South Central.....	3	8	10	31	29	36	40	24	49	³ 50
West South Central.....	4	8	21	26	22	17	19	26	29	25
Mountain.....	3	6	5	4	7	4	5	9	0	7
Pacific.....	10	11	9	13	15	11	21	7	13	3

INFLUENZA DEATHS.

Total.....	13	9	11	5	3	13	8	8	7	13
New England.....	1	1	0	0	1	2	0	0	0	1
Middle Atlantic.....	3	2	5	1	0	6	3	4	1	4
East North Central.....	3	2	1	1	0	0	2	2	2	¹ 3
West North Central.....	0	0	0	1	1	2	0	0	0	0
South Atlantic.....	4	3	2	1	1	1	2	0	3	² 2
East South Central.....	2	1	3	0	0	1	0	0	0	¹ 1
West South Central.....	0	0	0	0	0	0	1	0	1	2
Mountain.....	0	0	0	0	0	0	0	0	0	0
Pacific.....	0	0	0	1	0	1	0	2	0	0

PNEUMONIA DEATHS.

Total.....	432	358	318	307	304	292	269	271	251	314
New England.....	22	19	16	14	16	17	14	14	12	19
Middle Atlantic.....	200	167	141	127	126	131	121	115	102	136
East North Central.....	91	62	55	53	58	50	51	48	48	¹ 55
West North Central.....	11	15	22	17	13	14	9	17	13	18
South Atlantic.....	50	39	39	37	35	36	29	32	38	¹ 34
East South Central.....	15	14	9	12	15	12	10	10	5	¹ 11
West South Central.....	12	16	16	22	20	11	14	12	10	11
Mountain.....	12	8	10	4	7	4	8	7	10	13
Pacific.....	19	18	10	21	14	17	13	16	13	17

¹ Figures for Cleveland, Ohio, estimated. Reports not received at time of going to press.² Figures for Raleigh, N. C., estimated.³ Figures for Montgomery, Ala., estimated.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923.

Group of cities.	Number of cities reporting cases.	Number of cities reporting deaths.	Aggregate population of cities reporting cases.	Aggregate population of cities reporting deaths.
Total.....	105	97	28,898,350	28,140,934
New England.....	12	12	2,098,746	2,068,746
Middle Atlantic.....	10	10	10,304,114	10,304,114
East North Central.....	17	17	7,032,535	7,032,535
West North Central.....	14	11	2,515,330	2,381,454
South Atlantic.....	22	22	2,566,901	2,566,901
East South Central.....	7	7	911,885	911,885
West South Central.....	8	6	1,124,564	1,023,013
Mountain.....	9	9	546,445	546,445
Pacific.....	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR.

CANADA.

Communicable Diseases—Ontario—August, 1924. (Comparative.)

Communicable diseases have been notified in the Province of Ontario, Canada, for the month of August, 1924, as follows:

Disease.	August, 1924.		August, 1923.	
	Cases.	Deaths.	Cases.	Deaths.
Cerebrospinal meningitis.....	9	5		8
Chancroid.....	1		7	
Chicken pox.....	175		(1)	
Diphtheria.....	269	16	194	12
German measles.....	15		(1)	
Gonorrhea.....	175		212	
Influenza.....	18	3		
Lethargic encephalitis.....	1	1	(1)	
Measles.....	879	3	256	3
Mumps.....	180		(1)	
Paratyphoid fever.....	2		(1)	
Pneumonia.....		45		83
Poliomyelitis.....	3			
Scarlet fever.....	337	7	215	6
Septic sore throat.....	3		(1)	
Smallpox.....	6		9	
Syphilis.....	121		161	
Tuberculosis.....	² 156	74	213	135
Typhoid fever.....	120	8	114	14
Whooping cough.....	300	4	197	13

Population, 2,182,947.

¹ Not reported in 1923.

² Only 50 per cent stated to be reported.

Goiter.

During the period under report 61 cases of goiter were notified in the Province of Ontario, Canada. The disease was stated not to have been notifiable in the year 1923.

CHILE.

Typhus Fever—Talcahuano—Valparaiso.

Typhus fever has been reported in Chile as follows: Talcahuano, week ended August 2, 1924, 3 deaths, with 11 cases reported present; Valparaiso, three weeks ended August 9, 1924, 11 deaths.

CUBA.

Communicable Diseases—Habana.

Communicable diseases have been notified at Habana, Cuba, as follows:

Disease.	Aug. 21-31, 1924.		Remain- ing under treatment Aug. 31, 1924.	Disease.	Aug. 21-31, 1924.		Remain- ing under treatment Aug. 31, 1924.
	New cases.	Deaths.			New cases.	Deaths.	
Chicken pox.....	1			Measles.....	2		1
Diphtheria.....	4		3	Paratyphoid fever.....			2
Leprosy.....			15	Scarlet fever.....	1		2
Malaria.....	10		¹ 35	Typhoid fever.....	40	10	² 170

¹ From the interior, 15.

² From the interior, 38.

Typhoid Fever—Summary—June–August, 1924.

Occurrence of typhoid fever at Habana during the period June 1 to August 31, 1924, has been stated as follows: June 1–30, 1924—cases, 198; deaths, 24. July 1–31, 1924—cases, 393; deaths, 76. August 1–31, 1924—cases, 157; deaths, 37.

Paratyphoid Fever.

During the period under report, paratyphoid fever was reported as follows: June, 1924—cases, 11; deaths, 1. July, 1924—cases, 8. August, 1924—cases, 5.

CZECHOSLOVAKIA.**Communicable Diseases—April–June, 1924.**

During the three-month period April to June, 1924, inclusive, communicable diseases were notified in Czechoslovakia as follows:

Disease.	Cases.	Deaths.	Provinces reporting greatest number of cases.
Anthrax.....	13	3	Russia: Cases, 8; deaths, 3.
Cerebrospinal meningitis.....	69	21	Slovakia: Cases, 33; deaths, 6.
Diphtheria.....	853	51	Bohemia: Cases, 425; deaths, 29.
Dysentery.....	94	6	Bohemia: Cases, 32; deaths, 4.
Malaria.....	46	1	Russia: Cases, 34.
Paratyphoid fever A.....	9	1	Bohemia.
Paratyphoid fever B.....	61	1	Moravia: Cases, 50.
Scarlet fever.....	1,678	84	Bohemia: Cases, 611; deaths, 25.
Smallpox.....	7	2	Bohemia: Cases, 6; deaths, 2.
Trachoma.....	804	.....	Slovakia: Cases, 348; deaths, 26.
Typhoid fever.....	1,174	95	Slovakia: Cases, 493; deaths, 35.
Typhus fever.....	6	.....	Slovakia: Cases, 4.

Rabies.

During the period under report, seven deaths from rabies were notified in Czechoslovakia, of which four occurred in the Province of Bohemia.

ECUADOR.**Plague—Guayaquil—August 1–15, 1924.**

During the period August 1 to 15, 1924, a case of plague was reported at Guayaquil, Ecuador.

Plague-Infected Rats.

During the period under report, 7,592 rats were reported taken at Guayaquil, of which 33 were found plague infected.

EGYPT.**Status of Plague.**

During the week ended August 5, 1924, four cases of plague were reported in Egypt. Of these, one case occurred at Suez and the remaining three cases were distributed in three districts. From January 1 to August 5, 1924, 344 cases were reported as compared with 1,286 cases during the corresponding period of the year 1923.

ESTHONIA.**Communicable Diseases—June, 1924.**

During the month of June, 1924, communicable diseases were notified in the Republic of Esthonia, as follows:

Disease.	Cases.	Disease.	Cases.
Diphtheria.....	27	Tuberculosis.....	132
Measles.....	9	Typhoid fever.....	37
Paratyphoid fever.....	8	Typhus fever.....	5
Scarlet fever.....	33		

Population, census, 1,107,059.

FINLAND.**Communicable Diseases—July 16-31, 1924.**

During the period July 16-31, 1924, communicable diseases were notified in Finland as follows:

Disease.	Cases.	Disease.	Cases.
Diphtheria.....	28	Poliomyelitis.....	3
Dysentery.....	7	Scarlet fever.....	44
Paratyphoid fever.....	28	Typhoid fever.....	24

Population, estimated, 3,402,593.

GREAT BRITAIN.**Typhus Fever—St. Helens.**

Information received under date of August 19, 1924, shows the occurrence at St. Helens, England, of two cases of typhus fever and one suspect case during the period July 10 to August 7, 1924. The cases occurred in the same household. St. Helens is situated in the vicinity of Liverpool, on the Mersey River, and is a railway town.

JAPAN.**Epidemic Cerebrospinal Meningitis—Typhoid Fever.**

Under date of September 2, 1924, epidemic cerebrospinal meningitis, with a high death rate, was said to be spreading in the rural districts of Japan.

The death rate from typhoid fever in Tokyo, Japan, was stated to have been high since the earthquake last year.¹

¹ Public Health Reports, Sept. 5, 1924, p. 2335.

LATVIA.

Communicable Diseases—June, 1924.

During the month of June, 1924, communicable diseases were notified in the Republic of Latvia as follows:

Disease.	Cases.	Disease.	Cases.
Anthrax.....	1	Measles.....	147
Cerebrospinal meningitis.....	3	Mumps.....	35
Diphtheria.....	45	Scarlet fever.....	62
Dysentery.....	10	Smallpox.....	1
Influenza.....	1	Typhoid fever.....	140
Lethargic encephalitis.....	1	Typhus fever.....	26
Malaria.....	1	Whooping cough.....	62

Population, estimated, 1,900,000.

Riga—City and Province.

During the same period communicable diseases were notified in the city and Province of Riga, as follows:

Disease.	Cases.		Disease.	Cases.	
	Riga city.	Riga province.		Riga city.	Riga province.
Anthrax.....	1		Mumps.....	2	
Diphtheria.....	14		Scarlet fever.....	25	
Dysentery.....	3		Typhoid fever.....	49	
Malaria.....	1		Typhus fever.....	1	6
Measles.....	57	13	Whooping cough.....	9	5

Population, Riga City, 315,000.

MADAGASCAR.

Further Relative to Plague—Diego Suarez—Tamatave.

Information received under date of July 17, 1924, shows confirmation of reported plague at the ports of Diego Suarez¹ and Tamatave. On June 22, 1924, one case of plague was reported at Diego Suarez, followed by 13 cases with 8 deaths reported to July 10, 1924. At Tamatave the first case was reported June 6, 1924, and was followed during the month by the occurrence of four cases with four deaths.

Plague—Moramanga—June, 1924.

During the month of June, 1924, a fatal case of plague was reported at Moramanga, a locality in the central-east section of Madagascar.

MALTA.

Communicable Diseases—August 1-15, 1924.

During the period August 1 to 15, 1924, communicable diseases were notified in the island of Malta, as follows:

¹ Public Health Reports, Sept. 5, 1924, p. 1336.

Disease.	Cases.	Disease.	Cases.
Broncho-pneumonia.....	1	Trachoma.....	5
Lethargic encephalitis.....	6	Tuberculosis.....	11
Measles.....	6	Typhoid fever.....	14
Pneumonia.....	2	Undulant fever.....	66

Population, estimated, 216,702.

POLAND.

Communicable Diseases—June 8-21, 1924.

During the period June 8 to 21, 1924, communicable diseases were reported in Poland as follows:

JUNE 8-14, 1924.

Disease.	Cases.	Deaths.	Districts showing greatest number of deaths.
Cerebrospinal meningitis.....	7	12	Warsaw.
Diphtheria.....	60	2	Lwow.
Dysentery.....	23	5	Krakow.
Malaria.....	88		
Measles.....	347	1	Stanislawow.
Relapsing fever.....	2		
Scarlet fever.....	196	16	Krakow.
Smallpox.....	26	1	Do.
Typhoid fever.....	169	5	Silesia.
Typhus fever.....	115	6	Krakow.
Whooping cough.....	171	1	Warsaw.

JUNE 15-21, 1924.

Cerebrospinal meningitis.....	3	5	Posen.
Diphtheria.....	63	5	Lublin.
Dysentery.....	50	11	Krakow.
Malaria.....	59		
Measles.....	279	5	Lwow.
Relapsing fever.....	10		
Scarlet fever.....	157	10	Do.
Smallpox.....	4	2	Krakow.
Typhoid fever.....	163	16	Posen.
Typhus fever.....	85	6	Polesia.
Whooping cough.....	108	4	Lwow.

Rabies.

During the period under report, two deaths from rabies were reported in Poland, both occurring in the district of Warsaw.

SOUTH NIGERIA.

Plague—Lagos.

Plague was reported present at Lagos, Southern Nigeria, West Africa, September 8, 1924.

UNION OF SOUTH AFRICA.

Plague—Orange Free State.

During the week ended July 19, 1924, two cases of plague were reported in the Orange Free State, Union of South Africa. The cases occurred in natives on two farms in Smithfield district.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER.

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended September 19, 1924.¹

CHOLERA.

Disease.	Date.	Cases.	Deaths.	Remarks.
India				July 6-12, 1924: Cases, 5,549; deaths, 3,477.
Bombay	July 13-26	3	2	
Madras	Aug. 3-9	3	4	
Rangoon	July 20-26	4	4	
Indo-China:				
City—				
Saigon	June 29-July 19	5	4	
Persia:				
Bushire	June 1-30	1	1	
Siam:				
Bangkok	July 20-26	1	1	

PLAGUE.

China:				
Amoy	July 20-Aug. 2		2	
Ecuador:				
Guayaquil	Aug. 1-15	1		Rats taken, 7,592; found infected, 33.
Egypt:				
City—				July 30-Aug. 5, 1924: Cases, 4.
Suez	July 30-Aug. 5	1		Total from Jan. 1-Aug. 5, 1924: Cases, 344. (Corresponding period, 1923: Cases, 1,286.)
India				July 6-12, 1924: Cases, 276; deaths, 331.
Bombay	July 12-19	1	1	
Rangoon	July 19-26	18	16	
Indo-China:				
City—				
Saigon	July 20-26	1	1	Including 100 square kilometers in the surrounding country.
Iraq:				
Bagdad	June 22-28	4	2	
Do.	June 29-July 12	6	4	
Madagascar:				
Diego Suarez	June 22-July 10	14	8	Seaport.
Moramanga	June 1-30	1	1	Interior.
Tamatave	June 6-30	5	4	
South Nigeria (West Africa):				
Lagos	Sept. 8			Present.
Syria:				
Beirut	July 10-31	4		
Union of South Africa:				
Orange Free State—				
Smithfield district	July 13-19	2		In natives on two farms.

SMALLPOX.

Arabia:				
Aden	July 20-26		1	
Brazil:				
Porto Alegre	July 27-Aug. 2		1	
British South Africa:				
Northern Rhodesia	July 8-21	25		
Canada:				
British Columbia—				
Vancouver	Aug. 10-16	12		
China:				
Amoy	July 27-Aug. 2			Present.
Chungking	do			Do.
Colombia:				
Barranquilla	Aug. 3-9		1	
Czechoslovakia:				
State—				
Bohemia	Apr. 1-June 30	6	2	
Russia	do	1		Apr. 1-June 30, 1924: Cases 7; deaths, 2.

¹ From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received During Week Ended September 19, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Egypt:				
Cairo.....	May 21-27.....	20	7	
Hungary:				
Budapest.....	July 20-Aug. 2.....	11		
India:				July 6-12, 1924: Cases, 1,427; deaths, 442.
Bombay.....	July 13-26.....	49	22	
Karachi.....	Aug. 3-9.....	1	1	
Madras.....	do.....	17	7	
Indo-China:				
City—				
Saigon.....	June 29-July 26.....	33	11	
Java:				
East Java—				
Soerabaya.....	June 29-July 12.....	90	25	
Latvia.....				June 1-30, 1924: Cases, 1.
Mexico:				
Tampico.....	Aug. 11-20.....	1	1	
Persia:				
Bushire.....	June 1-30.....	2		
Poland.....				June 8-21, 1924: Cases, 30; deaths, 3.
Portugal:				
Lisbon.....	July 27-Aug. 26.....	10		
Oporto.....	Aug. 9-23.....	7	5	
Spain:				
Barcelona.....	July 31-Aug. 6.....		1	
Cadiz.....	June 1-30.....		5	
Malaga.....	Aug. 17-23.....		3	
Vigo.....	do.....		1	
Union of South Africa:				
East London.....	July 27-Aug. 2.....	1		
Yugoslavia:				
Belgrade.....	July 28-Aug. 3.....	1		

TYPHUS FEVER.

Algeria:				
Algiers.....	July 1-31.....	1		
Chile:				
Taleahuano.....	July 27-Aug. 2.....		3	Cases reported present, 11.
Valparaiso.....	July 19-Aug. 9.....		11	
Czechoslovakia:				Apr. 1-June 30, 1924: Cases, 6.
State—				
Slovakia.....	Apr. 1-June 30.....	4		
Egypt:				
Alexandria.....	July 27-Aug. 5.....	1		
Port Said.....	do.....	1		
Estonia.....				June 1-30, 1924: Cases, 5
Great Britain:				
St. Helens.....	Aug. 7.....	2		One suspect case, July 10, 1924.
Latvia:				Locality, vicinity of Liverpool
City—				June 1-30, 1924: Cases, 26.
Riga.....	June 1-30.....	1		
Palestine:				
Jerusalem.....	July 29-Aug. 4.....	2		
Khulde.....	Aug. 17.....	1		
Poland.....				June 8-21, 1924: Cases, 200; deaths, 12.
Syria:				
Damascus.....	July 14-20.....	1		
Turkey:				
Constantinople.....	Aug. 3-9.....	1		
Union of South Africa:				
Natal—				
Durban.....	June 22-28.....	1		
Transvaal—				
Johannesburg.....	July 20-26.....	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 28 to September 12, 1924.¹

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Apr. 20-June 28, 1924: Cases, 81,035; deaths, 56,740.
Do.....				June 29-July 5, 1924: Cases, 7,826; deaths, 4,272.
Bombay.....	May 4-10.....	1		
Do.....	June 29-July 12.....	2	1	
Calcutta.....	May 11-June 28.....	263	259	
Do.....	June 29-July 26.....	80	71	
Madras.....	June 1-21.....	7	6	
Do.....	June 29-Aug. 2.....	12	6	
Rangoon.....	May 11-June 28.....	98	76	
Do.....	June 29-July 19.....	16	15	
Indo-China.....				Jan. 1-Mar. 31, 1924: Cases, 27; deaths, 13.
Saigon.....	Apr. 27-June 28.....	6	4	Including 100 square kilometers of surrounding country.
Philippine Islands.....				June 15-28, 1924: 33 cases, 22 deaths, including suspects.
Manila.....	June 22-28.....	1		June 29-July 5, 1924: 5 cases, 4 deaths.
Do.....	July 6-12.....	1	1	Suspect. Occurring in a non-resident.
Province—				
Batangas.....	July 1.....	2	2	
Bulacan.....	June 21.....	1	1	
Do.....	June 28-July 4.....	1		
Cagayan.....	Mar. 30-Apr. 5.....	1	1	
Laguna.....	May 18-24.....	1	1	
Rizal.....	July 3.....	1	1	
Siam:				
Bangkok.....	May 4-June 28.....	21	18	
Do.....	June 29-July 5.....	2		
Straits Settlements:				
Penang.....	June 1-7.....	1	1	
Singapore.....	June 15-28.....	9	6	
Do.....	June 29-July 5.....	2	1	
On vessel:				
S. S. Argalia.....		1		At Bassein, Lower Burma, India. Case in European member of crew. Case removed to hospital. Vessel left May 16, 1924, arrived June 8 at Durban, South Africa; left Durban June 10 for Trinidad and Cuba.

PLAGUE.

Algeria:				
Mostaganem.....	July 21-28.....	4		Seaport.
Argentina:				
Chaco Territory.....				April, 1924: Cases reported.
British East Africa:				
Kenya.....				
Tanganyika Territory.....	Feb. 24-June 7.....	1	2	
Canary Islands:				
Teneriffe.....				
La Laguna.....	June 20.....	1		
Ceylon:				
Colombo.....	May 11-June 28.....	11	7	10 plague rodents.
Do.....	June 29-July 26.....	5	4	
Chile:				
Antofagasta.....	June 1-16.....	4		
China:				
Amoy.....	June 15-28.....		4	
Do.....	June 29-July 19.....		10	
Foochow.....	May 4-June 21.....		25	Cases not reported.
Ecuador:				
Eloy Alfaro.....	May 16-31.....	1		
Guayaquil.....	May 16-June 30.....	4	1	Rats taken, 23,717; found infected, 107.
Do.....	July 1-31.....	1		Rats taken, 17,437; found plague-infected, 31.
Posorja.....	July 1-15.....	1		
Puna.....	July 16-31.....	1		

¹ From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 28 to September 12, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Egypt:				June 11-30, 1924: Cases, 36. July 2-15, 1924: Cases, 8. Total, Jan. 1-July 15, 1924—cases, 328 (corresponding period, preceding year—cases, 1,190).
City—				
Alexandria	Apr. 2	1	1	
Port Said	Apr. 24-May 31	2	1	
Suez	Jan. 2-June 26	11	5	
Do.	June 27-July 5	2		
Province—				
Assiout	Apr. 1-June 18	40	31	
Beni-Suef	June 21	3	3	
Charkieh	Jan. 31	1	1	
Fayoum	Feb. 18-June 19	105	32	
Gharbia	Apr. 21-June 17	2	1	
Ghirga	Jan. 17-May 13	10	3	
Kalioubieh	Jan. 6-May 22	10	1	
Kena	Apr. 9-May 17	44	26	
Menoufieh	Jan. 2-June 12	48	31	
Mina	Feb. 5-June 26	39	20	
Greece:				
Kalamata				Reported July 15, 1924: Cases, 29; deaths, 6.
Patras	July 7	36		
Saloniki	July 3-4	2		
Hawaii Territory				July 15, 1924: Near Kukuihaele, Island of Hawaii, 1 plague rat.
India:				Apr. 20-June 28, 1924: Cases, 102,874; deaths, 84,656.
Do.				June 29-July 5, 1924: Cases, 832; deaths, 744.
Bombay	May 4-June 21	50	44	
Do.	June 29-July 12	3	3	
Calcutta	May 11-June 14	10	10	
Karachi	May 18-June 21	16	13	
Madras Presidency	May 18-31	7	2	
Rangoon	May 11-June 28	77	72	
Do.	June 29-July 19	64	57	
Indo-China:				Jan. 1-Mar. 31, 1924: Cases, 154; deaths, 106.
Saigon	May 4-June 28	10	2	Including 100 square kilometers of surrounding country.
Iraq:				
Bagdad	Apr. 20-June 21	121	60	
Japan:				
Shizuoka Prefecture—Higashi				To June 20, 1924 Cases, 2; death, 1.
Java:				
East Java—Soerabaya	June 8-21	14	14	
Madagascar:				
Diego Suarez	July 4			Present.
Tamatave	June 2-30	2	4	Bubonic.
Tananarive Province				Apr. 1-June 30, 1924: Cases, 138; deaths, 128; bubonic, pneumonic, septicemic.
Tananarive Town	Apr. 1-June 30	12	12	
Other localities	do.	105	97	
Persia:				
Abadan	May 1-31	20	12	
Bander Abbas	do.	11	6	
Bushire	do.	1	1	
Mohammerah	do.	111	78	Landed at quarantine.
Peru				May 1-June 30, 1924: Cases, 9; deaths, 6.
Do.				July 1-31, 1924: Cases, 6; deaths, 3.
Callao	June 1-30	1		
Do.	July 1-31	2		
Huaral	June 1-30	1		
Do.	July 1-31	1		
Lima (city)	May 1-June 30	5	5	
Lima (country)	May 1-June 30	1		
Do.	July 1-31		1	
Mollendo	do.	1	1	
Siam:				
Bangkok	May 4-June 14	3	3	
Syria:				
Beirut	Aug. 4			Present.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 28 to September 12, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Union of South Africa.....				Apr. 27-June 7, 1924: Cases, 28; deaths, 14. Dec. 16, 1923, to May 31, 1924: Cases, 347; deaths, 208 (white, 51 cases, 26 deaths; native, 296 cases, 182 deaths).
Orange Free State.....				May 11-June 14, 1924: Cases, 21; deaths, 9. June 22-28, 1924: Plague-infected mouse found in Kroonstad District.
On vessel: S. S. Amboise.....	July 10.....	1		At Marseille, France; removed to quarantine station. Case occurred in an Arab fireman embarked at Aden. Vessel left Yokohama May 30 and Colombo, Ceylon, June 22, 1924.

SMALLPOX.

Bolivia:				
La Paz.....	May 1-June 30.....	10	9	
Do.....	July 1-31.....	5	3	
Brazil:				
Bahia.....	May 18-24.....	1		
Porto Alegre.....	May 18-June 28.....	1	2	
Rio de Janeiro.....	May 18-24.....	2		
Do.....	July 20-26.....	1		
British East Africa:				
Kenya—				
Mombasa.....	May 4-31.....	3		
British South Africa:				
Northern Rhodesia.....	May 6-June 30.....	74	1	Natives.
Do.....	July 1-7.....	2		Do.
Canada:				
British Columbia—				
Vancouver.....	June 15-28.....	11		
Do.....	June 29-July 26.....	18		Not including suburbs.
Victoria.....	Aug. 3-9.....	1		
Manitoba—				
Winnipeg.....	July 13-Aug. 1.....	3		
New Brunswick—				
Restigouche County.....	June 1-30.....	7		
Do.....	July 6-Aug. 16.....	19		
Westmoreland County.....	Aug. 17-23.....	1		
Ontario.....				June 1-30, 1924: Cases, 24. July 1-31: Cases, 7.
Sarnia.....	July 20-26.....	1		
Windsor.....	June 22-28.....	1		
Quebec—				
Montreal.....	June 8-14.....	1		
Ceylon:				
Colombo.....	July 6-12.....	1		
Chile:				
Antofagasta.....	June 11.....			Under treatment at lazaretto, 2 cases.
Valparaiso.....	June 1-7.....		1	This report covers the two principal districts of Valparaiso.
China:				
Amoy.....	May 11-June 28.....			Present.
Do.....	June 29-July 19.....			Do.
Antung.....	June 9-29.....	41	3	
Do.....	July 7-13.....	4		
Chungking.....	May 11-June 28.....			Do.
Do.....	June 29-July 12.....			Do.
Foochow.....	May 18-June 28.....			Do.
Do.....	July 6-12.....			Do.
Hongkong.....	May 4-June 28.....	30	24	
Do.....	June 29-July 12.....	3	3	
Manchuria—				
Dairen.....	May 12-June 28.....	22	7	
Do.....	June 29-July 6.....	1	1	
Harbin.....	May 13-June 23.....	2		
Nanking.....	May 18-June 28.....			Do.
Do.....	July 6-19.....			Do.
Shanghai.....	May 25-31.....		1	
Tientsin.....	May 4-June 28.....	11		British municipality.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 28 to September 12, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Chosen:				
Fusan.....	May 1-31.....	1		
Denmark:				
Copenhagen.....	May 18-31.....	3	1	
Egypt:				
City—				
Alexandria.....	June 4-10.....	1		
Cairo.....	Feb. 19-May 20.....	100	25	
Port Said.....	June 18-24.....	1	2	
Do.....	June 25-July 8.....	3		
France:				
Limoges.....	Apr. 1-May 31.....		2	
Marseille.....	May 1-31.....		1	
Paris.....	May 21-31.....	2		
Gibraltar.....	July 21-27.....	1		
Great Britain:				
England and Wales.....				May 25-June 28, 1924: Cases, 342.
Counties—				June 29-July 26, 1924: Cases,
Derby.....	May 25-June 28.....	159		213.
Do.....	June 29-July 26.....	66		
London.....	do.....	1		
Northumberland.....	May 25-June 28.....	61		
Do.....	June 29-July 26.....	39		
Nottingham.....	May 25-June 28.....	29		
Do.....	June 29-July 26.....	32		
Yorks (North Rid- ing).....	May 25-June 28.....	54		
Do.....	June 29-July 26.....	27		
Yorks (West Rid- ing).....	May 25-June 28.....	5		
Do.....	June 29-July 26.....	27		
Greece:				
Saloniki.....	Apr. 21-May 4.....	7	2	
Haiti:				
Port au Prince.....	July 6-12.....	2		Developed at Cape Haitien.
India:				Apr. 20-June 28, 1924: Cases,
Do.....				28,396; deaths, 6,753.
Bombay.....	May 4-June 28.....	432	299	June 29-July 5, 1924: Cases, 1,549;
Do.....	June 29-July 12.....	60	43	deaths, 433.
Calcutta.....	May 11-June 28.....	36	32	
Do.....	July 6-26.....	27	16	
Karachi.....	May 18-June 28.....	51	18	
Do.....	June 29-Aug. 2.....	15	10	
Madras.....	May 18-June 28.....	32	10	
Do.....	June 29-Aug. 2.....	31	9	
Rangoon.....	May 11-June 28.....	53	21	
Do.....	June 29-July 19.....	11	5	
Indo-China.....				Jan. 1-Mar. 31, 1924: Cases, 3,058;
Saigon.....	Apr. 27-June 28.....	145	79	deaths, 921.
Iraq:				
Bagdad.....	Apr. 20-May 24.....	8	1	Including 100 sq. km. of sur- rounding country.
Italy:				
Messina.....	May 25-June 1.....	1		
Jamaica:				
Kingston.....	June 1-23.....	6		June 1-28, 1924: Cases, 141. June
Do.....	June 29-Aug. 9.....	12		29-Aug. 9, 1924: Cases, 154.
Japan:				(Reported as alastrim.)
Kobe.....	May 26-June 21.....	3		Reported as alastrim.
Nagoya.....	June 8-14.....	2		Do.
Tokyo.....	do.....	1		
Java:				
East Java—				
Madoera Residency—				
Sampang.....	May 22.....			Epidemic.
Malang.....	May 25-31.....	5	1	
Socrabaya.....	Apr. 13-June 28.....	501	143	
West Java—				
Blavia.....	May 31-June 27.....	3		
Do.....	July 6-12.....	1		
Latvia.....				Apr. 1-May 31, 1924: Cases, 2.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.**Reports Received from June 28 to September 12, 1924—Continued.****SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico:				
Durango.....	June 1-30.....		2	
Guadalajara.....	May 1-June 30.....	9	4	
Do.....	July 8-14.....		1	
Mexico City.....	May 4-June 28.....	96		Including municipalities in Federal district.
Do.....	June 29-Aug. 16.....	47		
Salina Cruz.....	May 25-31.....	1	1	
Tampico.....	June 14-20.....	2		
Do.....	July 1-31.....	7	6	
Tuxtepec.....	July 3-18.....	3	1	State of Oaxaca.
Palestine:				June 17-23, 1924: 20 cases in northern district.
Samaria Province—				
Samak.....	May 27-June 2.....	1		
Paraguay:				
Asuncion.....	June 2.....			Present.
Encarnacion.....	do.....			Many cases reported.
Peru:				
Arequipa.....	Jan. 1-June 30.....		5	
Poland.....				Mar. 30-June 7, 1924: Cases, 261; deaths, 21.
Portugal:				
Lisbon.....	May 25-June 28.....	7	2	
Do.....	June 29-July 19.....	4	1	
Oporto.....	May 11-June 28.....	18	16	
Do.....	June 29-Aug. 9.....	13	11	
Russia.....				Jan. 1-31, 1924: 2,243 cases.
Siam:				
Bangkok.....	Apr. 27-June 14.....	3	5	
Spain:				
Barcelona.....				Year 1923: Cases, 160.
Malaga.....	June 29-Aug. 16.....		16	
Valencia.....	June 8-21.....	3		
Do.....	July 13-19.....	1		
Straits Settlements:				
Singapore.....	May 4-24.....	2	1	
Sumatra:				
Medan.....	Jan. 1-31.....	5		
Switzerland:				
Berne.....	May 25-June 28.....	22		
Do.....	June 29-July 26.....	9		
Syria:				
Damascus.....	May 28-June 12.....	12		
Tunis:				
Tunis.....	May 27-June 30.....	17	4	
Do.....	July 1-Aug. 11.....	8	10	
Turkey:				
Constantinople.....	June 1-7.....	1		
Union of South Africa.....				Mar. 1-June 30, 1924: Cases, 167 (white, 15; native, 152). June 29-July 5, 1924: Outbreaks.
Cape Province.....	May 4-31.....			Outbreaks.
Orange Free State.....	May 4-10.....			Do.
Transvaal.....	May 4-31.....			Do.
Johannesburg.....	July 6-12.....	1		
On vessel:				
S. S. Karon.....	May 7.....	1		At Durban, South Africa, from Bombay, India. Vessel left Bombay Apr. 16, 1924. Patient, European.
S. S. Mount Evans.....	July 8.....	1		At Key West, Fla., from Manchester, England.

TYPHUS FEVER

Algeria:				
Algiers.....	May 1-June 30.....	24	9	Year 1923: Cases, 1,166, of which 27 were in the military population.
Bolivia:				
La Paz.....	July 1-31.....		1	
Brazil:				
Porto Alegre.....	June 1-7.....		1	
Chile:				
Antofagasta.....				June 16, 1924: Two cases in Lazaretto.
Concepcion.....	May 20-26.....		3	
Do.....	July 8-21.....		3	
Iquique.....	June 22-28.....		1	
Talcahuano.....	May 25-31.....	2		
Do.....	June 29-July 26.....	16	4	
Valparaiso.....	May 25-June 21.....		11	
Do.....	June 29-July 19.....		5	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 28 to September 12, 1924—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Antung.....	June 2-16.....	6		
Chungking.....	May 11-June 14.....			Present.
Chosen:				
Chemulpo.....	May 1-June 30.....	10		
Seoul.....	do.....	43	5	
Egypt:				
Alexandria.....	June 25-July 22.....	3		
Cairo.....	Feb. 19-May 20.....	38	9	
Port Said.....	July 24-29.....	2		
Esthonia.....				Apr. 1-May 31, 1924: Cases, 32.
Germany:				
Coblenz.....	July 13-19.....	2		
Great Britain:				
Ireland—				
Dublin.....	June 8-14.....	1		
Do.....	July 13-19.....	1		
Lismore.....	July 19.....	1		
Longford.....	do.....	1		
Greece:				
Saloniki.....	Apr. 20-May 4.....	6		
Iran:				
Bagdad.....	Apr. 27-May 10.....	2		
Latvia.....				Apr. 1-May 31, 1924: Cases, 82.
Mexico:				
Durango.....	July 1-31.....		2	
Guadalajara.....	May 1-June 30.....	2	2	
Mexico City.....	May 4-June 28.....	59		Including municipalities in Federal district.
Do.....	June 29-Aug. 16.....	53		Do.
Torreon.....	July 1-31.....		2	
Palestine:				
Jaffa.....	June 17-23.....	1		
Do.....	July 8.....	1		
Jerusalem.....	July 1-28.....	2		
Kantara.....	July 15-21.....	1		
Peru:				
Arequipa.....	Jan. 1-June 30.....		4	
Poland.....				Mar. 30-June 7, 1924: Cases, 2,616; deaths, 252.
Portugal:				
Oporto.....	June 15-21.....		1	
Russia.....				Jan. 1-31, 1924; 14,275 cases.
Spain:				
Barcelona.....	July 10-16.....		1	
Syria:				
Aleppo.....	June 8-14.....	1		
Tunis:				
Tunis.....	May 27-June 9.....	4		
Turkey:				
Constantinople.....	May 18-June 21.....	7	2	
Do.....	July 6-19.....	1	1	
Union of South Africa.....				Mar. 1-June 30, 1924: Cases, 418; deaths, 45.
Cape Province.....				Mar. 1-June 30, 1924: Cases, 249; deaths, 23.
Do.....				July 6-12: Outbreaks.
Natal.....				Mar. 1-June 30, 1924: Cases, 27; deaths, 5.
Do.....				July 6-12: Outbreaks.
Durban.....	Apr. 29-26.....	1		
Orange Free State.....				Mar. 1-June 30, 1924: Cases, 83; deaths, 11.
Do.....				June 1-July 5: Outbreaks.
Transvaal.....				Mar. 1-May 31, 1924: Cases, 39; deaths, 5.
Johannesburg.....	May 11-24.....	2		
Do.....	June 29-July 5.....	1		

YELLOW FEVER.

Brazil:				
Pernambuco.....	May 11-17.....	2	1	
Salvador:				
San Salvador.....	June 10-Aug. 25.....			Present in San Salvador and vicinity.